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AMERICAN REFUSE DISPOSAL PLANTS

Those at Minneapolis, Milwaukee, Cleveland, Buffalo, Rochester, Westmount, and Scranton Described — Comparison of Incineration, Cremation and Reduction by Newark Engineers

Prior to preparing the report on the disposal of the refuse of Newark, N. J. (an abstract of which appeared in our issue of August 22), the engineers who prepared that report—J. C. Hallock, deputy chief engineer of the Department of Public Works, and F. O. Runyon, consulting engineer—made personal inspection of ten disposal plants of various types in order to determine their merits from an economic and sanitary standpoint. The plants visited were those at Minneapolis, Minn., Milwaukee, Wis., Chicago, Ill., Columbus, O., Cleveland, O., Buffalo, N. Y., Rochester, N. Y., Westmount, Can., Richmond Borough, New York City, and Scranton, Pa. The conditions found at these several cities were described in the report, which descriptions are abstracted below.

MINNEAPOLIS INCINERATOR.

Minneapolis has especially attracted the attention of sanitarians because of the fact that commissioner of health Dr. P. M. Hall has trained the householders to drain the garbage and wrap it in paper before depositing it in the can. The special virtue of this method of handling garbage by the householder lies in the reduction of the fly nuisance, a cleaner garbage can and the insurance of a good proportion of combustible matter, in the form of paper, for the incinerating plant. The latter point is a detriment rather than a benefit where the destructor type of plant is in use, as it prevents a proper mixture of rubbish and ashes with the garbage for the better distribution of moisture throughout the mass.

During the month of January, 1912, the city collection department composed of one inspector and 31 drivers gathered 841 loads of garbage and 2,298 loads of ashes. The capacity of the garbage wagons is 100 cubic feet each with a "struck" load, but in practice the wagons are heaped so that their actual capacity is at least 33 per cent. in excess of this figure, or approximately 5 cubic yards. The ash wagon is the common type of bottom dump wagon of about 3½ cubic yards capacity.

All wagons are supplied by the city and each driver is paid \$100 per month for his services and that of his team. Each driver is assigned a district and held strictly accountable for the removal of ashes and garbage therein and is not required to work according to a schedule of hours per day. His duties consist in the maintaining of a clean district and not in the rendering of a given number of hours work per day. He is, however, required to make at least one collection of mixed ashes and rubbish and one of garbage from each household in his district each week.

The garbage is collected in metal bodies mounted on wheels or runners according to the season and is delivered at a transfer station about one mile from the center of the business district, which is also the approxi-

mate center of population. The mixed ashes and rubbish are carted to the low lying spots of the city, whether these be streets or vacant lots. The commissioner of health believes that within a few years there will be no more available dumping grounds within the city and that when this time is reached some other method of ash and rubbish disposal must be found.

The city ordinance authorizing and directing the commissioner of health to collect and dispose of garbage throughout the city and to take charge of and operate the city's crematory says in part "that the commissioner of health, in his discretion, may require the owners and proprietors of hotels, boarding houses, restaurants, commission houses, stores and markets, at their own expense, to collect and remove their own garbage and waste material and to convey the same to said garbage crematory or dispose of the same in such manner as shall be approved by the commissioner of health."

As having a bearing upon the method of collection and disposal of garbage in Minneapolis it might be noted that even here, where the householders more generally conform to the requirements for a complete separation of garbage from ashes and under the supervision of a highly efficient commissioner of health, our inspection of their largest dump disclosed a large flock of starlings feeding on all too evident garbage, proving conclusively that a perfect separation of these two classes of refuse is still to be realized.

The transfer station is on a siding of the Sault Ste. Marie railroad, where the metal bodies of the garbage vehicles are loaded by a traveling crane onto flat cars, twelve bodies to the car, with total average weight of 36 tons per car. From the transfer station the cars are taken to the incinerating plant, which is located about four miles from the center of the business district of the city. At the plant a traveling crane picks up one body at a time and conveys same into the building, where a special motor on a crane tilts the body, discharging the contents into a hopper opening directly over an incinerator of the Decarie type. This plant was erected by the city about twelve years ago before the organization of the Decarie Incinerator Company, but following the original designs of the inventor with modifications developed by the present commissioner of health. This type of plant is one in which the garbage is burned on an upper grate over a grate upon which coal is used in starting and at other times as may be necessary, the garbage gradually falling upon the lower grate and being there consumed.

In this plant the gases from the furnace pass over into what is commonly termed a Dutch oven, in which coal is continually burned and the function of which is to raise the temperature of the furnace gases, destroy germ life



MINNEAPOLIS INCINERATOR.

and remove noxious vapors. From this oven the gases are made to pass through a vertical fire tube boiler and thence through an induced draft equipment to the stack. The steam generated in this boiler is used for supplying a 50 k. w. direct current lighting unit and for heating a medium sized work house, a tuberculosis hospital and a green house.

A duplicate generating plant for 200 4-ampere magnetite street lamps is now being installed in a building adjacent to the garbage plant; also a 150 h.p. water tube boiler. Such surplus steam as the garbage plant develops over and above that required by the buildings mentioned will be used by the electric plant, but the water tube boiler will be the main source of supply for the electric plant.

The garbage plant consists of two 125-ton units, but the commissioner of health informed us that its actual capacity was 300 tons per day. At the present time they are burning about 120 tons of garbage per day of 24 hours, using between two and three tons of coal per day.



ANOTHER VIEW OF MINNEAPOLIS INCINERATOR.

The total cost of the plant was \$64,000, but allowance should be made for the fact that a large portion of the labor was supplied by inmates of the workhouse.

The cost for collection of ashes, rubbish and garbage is \$1.31 per ton. The cost of disposal of garbage is \$0.78 per ton, which is reduced to a net cost of \$0.56 per ton by crediting plant with the heat and light furnished to the city institutions before mentioned at the rate of 6 mills per h. p. for heat and 2 cents per k.w. hour for light.

MILWAUKEE DESTRUCTOR.

[The Milwaukee plant has been quite thoroughly described by us in our issues of Feb. 10 and April 14, 1909, May 4 and June 29, 1910, and Aug. 2, 1911. The refuse is incinerated by a destructor of the Heenan and Froude type.]

The records of the cost of operation of the destructor plant are not in such condition as to warrant their use as a basis for comparison, but from the 1911 data available in the office of the director of public works we found the average cost per ton of the destruction of the gar-

bage to be \$1.44 and the cost of mixed garbage and ashes to be \$0.99 per ton. This includes the cost of 400 tons of coal used during five months of the year when the percentage of green garbage was high and it was necessary to use additional fuel.

These figures should not, in justice to the plant, be accepted, for the reason that the number of employees at the present time is far in excess of the actual requirements. From our inspection we are convinced that it would be properly and sufficiently manned with two-thirds the force employed at present.

The condition of the plant is excellent, the garbage is destroyed at temperatures between 1,400 degrees and 1,800 degrees Fah., without odor, and all of the power used about the plant is obtained from steam generated by it in boilers through which the furnace gases pass on their way to stack.

The clinkers are now being used to fill up the lake front and are very valuable for this purpose, being hard and vitreous, absolutely sanitary and superior in every way to household ash. However, on account of a demand for their use in concrete construction it is proposed to install a crusher and screen and to dispose of the ground clinker by sale to contractors at \$0.75 per cubic yard. A conservative estimate of the value of the by-products of destruction at this plant is \$54,000 per year—\$48,000 in steam produced and \$6,000 in clinker sold.

CHICAGO DISPOSAL.

The city of Chicago is at present disposing of its garbage under a contract which expires in December, 1913. The ashes are being dumped along the lake front. The common council has appointed a committee to investigate the general subject of disposal plants, but the commissioner of public works recommends the continuance of the present system in order to make park land along the lake front.

For the year 1911 it cost the city of Chicago \$3.80 per ton to collect and dispose of its garbage, there being included in this cost the contract price of \$48,000 per year paid to a private reduction plant. It also costs them \$0.50 per cubic yard to collect and dispose of their ashes and rubbish.

COLUMBUS REDUCTION PLANT.

[The reduction plant of the city of Columbus has been described by us in our issues of March 16, 1910, and Nov. 15, 1911, and little, if anything, is given in this report which is not contained in our description. The authors of the report consider that "The Columbus plant is probably the finest example of a municipal garbage reduction plant in this country, both in design of buildings and equipment and in its administration."]

CLEVELAND REDUCTION PLANT.

The reduction plant at Cleveland, O., is that next described. This was purchased by the city from a private company in 1905 for \$87,500, the plant having a capacity of 100 tons per day. The city has since erected additional buildings and equipment increasing the capacity to 240 tons a day. (See Municipal Journal Feb. 13, 1907, and Sept. 23, 1908.)

The plant was not well designed initially and it has been impossible to improve conditions by subsequent additions, the original buildings consisting of cheap sheet iron enclosures and the arrangement of equipment not conducive to economical handling. In spite of these handicaps and except for a period during a change of political administration, the operation of the plant including the collection department has been so well organized and supervised by an official with high ideals of public service as to show in 1907 a lower cost of collection and disposal than by contract in 1905, with a considerable increase in the amount of garbage handled.

The processes of reduction are, in general, similar to those employed in the Columbus plant and the local conditions which are controlling factors in the selection of the method of refuse disposal are also similar, natural gas being used as fuel by householders and coal costing \$1.85 per ton.

One of the principal ash and rubbish dumps was found to be on fire in several places.

BUFFALO REDUCTION AND UTILIZATION.

In Buffalo, N. Y., the refuse is collected in three separate classes—ashes, garbage and rubbish—which the householders are required to place in separate cans. Ashes are carted to the dumps, garbage to a private reduction plant and all other refuse to a refuse utilization plant owned and operated by the city. The city contracts all of the collections and the reduction of garbage.

In 1907 the city purchased the utilization plant from a private corporation for \$50,000. It consists of a brick building 200 x 50 feet and contained when purchased a destructor of the Meldrum type, with boiler through which the furnace gases were passed and which produced the power required in plant operations. Since that time two boilers have been added and a sewage pumping plant. There is now being installed a destructor of the Heenan & Froude type.

The rubbish is unloaded on a receiving floor and raked into an inclined conveying apron which conveys it to a sorting room where girl pickers remove all salable material and place in it bins, the remainder passing through to the feeding floor over the destructor furnaces. This rubbish is dry or wet according to the condition when placed in the can by the householder or to the weather conditions during transportation to plant. The salable rubbish consists of paper, charcoal sacks, bags, rags, tin cans, metal and bottles. The tin cans are loaded in cars and sold to detinning companies and machinery has been installed for converting the cans



ROCHESTER'S NEW INCINERATOR.

Fired for first time day picture was taken—Feb 12, 1912.

into nailing caps. Bottles are sorted and sold to breweries and blueing companies, metal to dealers and old shoes sold for burnishing and polishing castings. The plant is also credited with 70 cents per hour for steam supplied to the sewage pumping stations. The girl pickers work for \$1 per day of eight hours.

The report of the Bureau of Streets for the year ending June 30, 1910, shows charges for operation of plant, including interest and repairs and also some new equipment, of \$38,530.60, and receipts from the sale of rubbish of \$40,653.02, or a profit for the year of \$2,122.42.

ROCHESTER INCINERATOR.

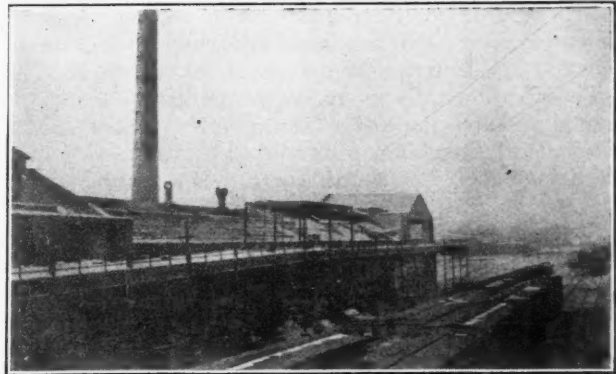
At Rochester, N. Y., an incinerator plant has recently been installed by the Decarie Incinerator Company for the city and was undergoing its initial test at the time of the visit of Messrs. Hallock and Runyon.

This plant is of 60 tons capacity and is representative

of the latest and most improved form of incinerator designed by this company. It is intended to handle rubbish only and is equipped with inclined conveyor from receiving floor to sorting room, where the various salable rubbish is removed by pickers and deposited in bins, the remainder passing by means of the same conveyor to and over the incinerator, where it automatically dumps into a hopper and chute to the furnace.

Between the receiving floor and the incinerator room there is a baling room equipped with a motor driven baling machine in which the paper of various classes will be baled.

In connection with the incinerator there is installed a 150 h.p. water tube boiler through which the combustion gases from the furnace pass, and thence to the stack.



BUFFALO'S REDUCTION PLANT.

New ramp for wagons on side of building

The power for motor driven conveyors and baling machines and for lighting the plant is purchased from a local electric lighting company at 2¼ cents per kilowatt hour, and the steam produced has been contracted for by the same company at the rate of 10 cents per 1,000 lbs. per hour.

As this is a new and as yet untried plant there are no cost statistics to be reported.

WESTMOUNT DESTRUCTOR.

Westmount is a municipal corporation which serves as the residential section of Montreal and has a population of about 16,000. The rubbish of this section is destroyed in a destructor plant which is under the charge of Geo. W. Thompson, who is also general superintendent of the light and power department of the municipality.

This plant is essentially a municipal electric lighting plant designed for commercial and public lighting purposes and erected as a protest against the exorbitant rates for lighting charged to the citizens and the municipality by the local electric light and power company. The destructor plant is an auxiliary enterprise operated in the same building, the steam generated in the destruction of refuse being used in the production of electrical energy.

The complete installation includes one 50-ton Meldrum destructor, one 50-ton Heenan & Froude destructor, five water tube boilers with an aggregate capacity of 1,000 h.p., and four engine-driven electric generators with an aggregate capacity of 1,000 k.w.

The destructor plant burns garbage, rubbish and screened household ash. By screening the ash a combustible much higher in heating value is obtained, but at the expense of cleanliness, power and attendance.

There is a common collection of ashes, rubbish and garbage by the city, but when no garbage or rubbish is collected by a cart the ashes are passed through a screen. Carts drive up to the receiving or upper floor and dump their contents, which is then raked into storage bins or

hoppers over the destructors. The refuse is pulled down and out of these hoppers into furnaces which are of the same type as those described in the Milwaukee plant, with the exception that clinker is handled by a car which travels on an overhead rail to a clinker yard. The clinker is used by the road department in concrete and road work and any not so used is sold to contractors.

The report for twelve months ending October 31, 1910, shows a total revenue from electric lighting and destructor plants of \$102,149.17 and a total cost of operation of the combined plants of \$75,426.38, leaving a net profit of \$26,722.79. In the operating expenses are included interest on bonds, sinking fund for retirement of bonds and a most liberal reserve for a plant depreciation. The electric plant is charged with the heat furnished from refuse consumed. The destructor plant is credited with heat sold to electric plant, clinkers sold to private contractors, and garbage destroyed, the last item charged against the Department of Health—\$9,449.06 last year.

The combined plants are ably administered under the immediate direction of superintendent Thompson and they afford a striking example of the possibilities in a municipal enterprise of this sort when conducted with the same skill and keen business acumen that characterize successful commercial undertakings of the same magnitude. The plants are entirely free from political influence and the superintendent is empowered to engage and discharge employees, and is held strictly accountable for results.

The garbage plant is free from odors and there has never been a complaint made against it, although it is situated in a strictly residential community.

WEST NEW BRIGHTON DESTRUCTOR.

[The plant at West New Brighton, Richmond Borough, New York City, was described in our issues of Dec. 5, 1906, and Sept. 30, 1908. At the present time it consumes approximately 25 tons of refuse per day at a cost of \$1.34 per ton, which does not include fixed charges.]

All of the power used is produced from the steam generated by the destructor gases and no sale of clinker is allowed. The plant will operate with improved economy when the quantity of garbage handled reaches a point reasonably near its rated capacity. Protests were made against its erection by householders in the neighborhood, but no complaints have been received by the department since the plant was put in operation.

Another plant of the same make and capacity, but with improved devices for feeding and clinker ejection, is being installed by the same borough at Clifton.

SCRANTON'S CREMATORIES.

The Scranton, Pa., plant consists of four garbage crematories of the F. P. Smith design and was installed by Lewis and Kitchen. It is designed to handle garbage and light combustible matter. Its rated capacity is 50 tons, but at times it has disposed of 90 tons per day. Combustion is at comparatively low temperature and is incomplete. No records have been kept of the temperatures and from our observations and comparison with incinerating and destructor plants we believe that the temperature in the combustion chamber is commonly below 1,250 degrees Fah., the temperature at which garbage must be burned for the complete elimination of noxious vapors.

The plant is favored by its location next to a packing plant the odors from which are at times highly objectionable and on account of this circumstance any odors emanating from the crematory pass unnoticed.

The plant is inherently defective and changes have been made in its construction which increased its capacity for disposing of garbage without in any way improving its destruction from a sanitary standpoint.

COMPARISON OF METHODS

As to refuse disposal, the authors considered dumping, the reduction system, the cremation system, incineration and the destructor system. Dumping they considered out of the question for Newark, since almost the only land available was the meadows, which would involve long hauls; moreover, as they are considered to be the future site of industrial establishments any fill made there should be such as would improve the value of the property and not depreciate it from a sanitary standpoint. "Dumps include putrescible matter, which in the heat of summer produce noxious odors and seriously interfere with the rights of adjoining property holders."

The reduction system is well adapted to cities where comparatively little or no coal is used as a household fuel and consequently where the difficulties in the way of a proper separation of household refuse are the least; but under the contract system it is always necessary to provide a bonus to induce the investment of private capital in the enterprise, and if undertaken as a municipal service it involves the installation of an equipment much more costly than for incineration or destruction and of a highly complex character.

Furthermore, the successful operation of a reduction plant is dependent upon a very efficient technical administration. In such a plant it is extremely difficult if not impossible to prevent the emission of objectionable odors, and as a rule these plants are located on the extreme outskirts of a city, an admission of the nuisance liable to be created.

The most valuable product of a reduction plant is the grease extracted, and to carry the process to its greatest refinement a percolating equipment employing naphtha in large quantities is used. This constitutes a constant menace to life and property, the destruction of plants at Chicago, St. Paul and Paterson affording examples of the dangerous character of this industry.

A reduction plant can only handle organic matter, and the contents of the receptacle of the careless householder who does not make a complete separation must go to the dumps or be otherwise destroyed by other means.

The conditions described as favorable to the installation of a reduction plant do not obtain in Newark, and the only feasible location for such a plant would be one well removed from the occupied ground on the meadows, this involving a long and expensive haul.

The cremation system or burning of garbage at comparatively low temperatures does not completely consume the organic matter, gives forth objectionable stack odors, and is generally an unsatisfactory method which does not comply with sanitary requirements for installations on a larger scale. For hotel or apartment houses where the fuel used and gases given off may be used in supplying the heat for a hot water supply system, higher temperatures may be carried, but in the case of larger installations the fuel cost for high temperature combustion would make this method prohibitive.

Incineration differs principally from cremation in the temperatures obtained in combustion, and although, like cremation, it requires the use of additional fuel, it is nevertheless a satisfactory method of refuse disposal for those municipalities which are content with their partial success in the enforcement of separate collections and the more or less objectionable ash dumps containing garbage mixed with the ash. It only partially solves the sanitary phase of the problem of refuse disposal, leaving the household ash to be carted to the dumps, and it is well recognized that a perfect segregation of the garbage from the ash is impossible of attainment, as evidenced by inspection of dumps where this system is employed.

The destructor system has previously been defined in this report as the burning of ashes, rubbish and garbage at temperatures above 1250 degrees Fahr., but this definition should be amplified to include the requirement of artificial draft as a necessary adjunct to a high rate of combustion. This system is generally favored where it is desired to utilize the power developed by the refuse consumed, but it should be kept in mind that the utilization of surplus heat is of secondary consideration, and that the primary object of mixed refuse destruction is to completely reduce the material to an innocuous clinker.

Although this utilization of heat often reduces the cost of upkeep of plant, it should nevertheless be remembered that the principal result obtained in this system is a sanitary one, affording complete destruction of germ life in all classes of refuse with entire absence of objectionable odors.

The disadvantages are few and mainly due to improper design and faulty administration. The claim is sometimes advanced by engineers that the hauling of all refuse to the plant is one of its disadvantages, but we hold that this is more than counter-balanced by the fuel value of the ash and combustible waste in the destruction of the garbage. For excessive hauls, where the expense of hauling the ash alone exceeds the cost of fuel delivered at the plant, their contention is correct; but where the haul to the plant is as costly as that to a dumping ground, or where it is practicable to maintain several plants and thereby reduce the length of haul, this argument cannot be upheld.

Another objection urged against the destructor system is the necessity for expert firemen, the stoking of refuse, which has wide variations as a fuel, requiring the exercise of greater skill and judgment than is the case in the stoking of coal of uniform heating value. In our opinion this argument is fallacious and based upon a very low conception of the grade of intelligence possessed by the competent stoker of boiler fires, who, in addition to his duties in stoking, is required to maintain a uniform pressure of steam and a stationary water line.

The advantages of this system of refuse disposal are many and have been most forcibly impressed upon us by inspection of the various types of plant. We list in the following the principal advantages:

First. The destruction of all organic matter in an absolutely sanitary manner.

Second. It permits the destruction of the ashes, rubbish, garbage and street sweepings, reducing all to an innocuous clinker.

Third. The fuel is supplied by the ashes, rubbish and street sweepings.

Fourth. The heat generated in combustion at high temperatures can be utilized in the production of power from which an income may be derived. A revenue can be obtained from the sale of clinker.

Fifth. A city can operate more than one plant with economy, which is not feasible in the reduction system. This permits of shorter hauls and reduces the risk of interference by fire or the failure of a part of the equipment.

Sixth. Separate collections are not necessary.

Seventh. The class of labor required in the operation of the plant is not as skilled as that required in the reduction system.

Eighth. The cost of renewals and repairs is considerably smaller than in other types of disposal plants.

Ninth. The plant may be located in the center of the city without creating nuisance, experience at Westmount, Canada, and West New Brighton, N. Y., fully demonstrating this fact. This feature makes the system particularly desirable for Newark, where locations within the city limits would materially reduce the hauling cost.

GARBAGE DISPOSAL IN SEATTLE

Report and Recommendations of Efficiency Engineers and
Commissioner of Health—Cost of Collecting—
Civil Service.

Two reports have recently been made public concerning the collection and disposal of garbage in the city of Seattle, Washington, one by Dr. J. E. Crichton, Commissioner of Health, and the other by the Emerson Company, efficiency engineers, who have been investigating the Health Department, which department has charge of handling the garbage collection.

Dr. Crichton has been investigating the methods of garbage collection in a number of the large cities of the east, and has incorporated his conclusions in a communication to the City Council. His report is divided under three heads—collection, destruction and general. He considers that the topography of Seattle, which makes the cost of hauling excessive, as well as the ungraded streets and alleys and the vast territory over which the city is spread, makes the conditions of collection in that city unusually difficult. He believes that the entire collection and destruction should be done by the municipality, both because it is sanitary work and because this plan seems to give the greatest freedom from graft. He recommends that the city own its own wagons and motor driven vehicles, with full equipment other than teams and harness, which latter should be hired. He believes that the use of the single can for all waste, rather than the separation of the waste into two or more classes, is not only more economical but is more generally satisfactory. The waste collected should be removed to several transfer stations located in different parts of the city, and from these points removed rapidly by auto trucks or by scows to the points of destruction or of deposit. He recommends that the waste be used for filling in lands, which would greatly increase their value, these fills being trimmed and dressed with sufficient earth and ashes to make them sanitary. Part of this fill would be used on tide lands owned or to be owned by the city, which could then be used for salt water recreation piers and parks.

The salaries for the Garbage Department for the ensuing year he estimates at \$83,955, and the supplies and other expenses at \$149,500—a total of \$233,455.

The Emerson Company, in its report, makes the following estimate of the total cost of collecting and disposing of the city's garbage for one year:

(1) An average of 52 wagons per day on the work for 310 days in the year. Team, harness and driver to be hired at \$6 per day. Additional man employed by city at minimum wage of \$2.75 per day for each wagon, 25 cents per day allowed for upkeep of each wagon. Total per day, per wagon and two men, \$9; 16,120 wagon days at \$9—\$145,080.

(2) As we deem it impossible to secure thoroughly efficient service or build up an effective organization on the basis of straight day pay at \$2.75 per man, we set aside for the purpose of providing a graduated increase of pay, a practical method of efficiency reward, \$1,000 per month—\$12,000.

(3) Depreciation on sixty wagons at 20 per cent per annum—\$12,000.

(4) Expense incident to the operation of three incinerators—\$38,400.

(5) Operating scows and dumps—\$9,000.

(6) Office and general administration—\$7,200.

(7) District foremen, weighers, extra labor—\$13,700.

(8) Interest at 4½ per cent. on \$160,000 of bond money invested in equipment—\$7,200.

(9) Damage claims, breaking down fences, etc., at \$100 per month—\$1,200.

Total—\$236,900.

(10) Recovery from three incinerators—\$10,000.

Net total—\$226,900.

"With this estimated expense it is proposed to operate one incinerator more than during the past year. It is proposed to collect a total of 93,500 tons of garbage, if necessary, approximately 3,000 tons more than will be collected during the year ending July 31, 1912."

The efficiency engineers considered some method of "efficiency reward" absolutely essential to securing the degree of efficiency upon which this estimate was based (see Municipal Journal, page 983, June 27, 1912). It suggested four grades of pay—\$2.75, \$3, \$3.25 and \$3.50 per day—promotions or reductions in grade to be made on the recommendation of the superintendent of garbage, endorsed by the commissioner. It estimated that the construction and purchase of equipment would cost about \$160,000, and that \$275 per month will be obtained as an income from the sale of clinker by each of the three incinerators, which is somewhat more than has been realized in the past, but which is believed to be justified, since the demand for crusher clinker has been increasing considerably during the past few months.

The collection of 93,500 tons of garbage by the 52 wagons allowed for would require an average of two loads per day by each wagon, each load averaging 5,800 pounds net weight, a record which has been equaled by the present contractors. "With a system of individual efficiency rewards, by a partial betterment of conditions, with more efficient planning and despatching, the elimination of conflicting interests, the suppression of improper collections, and with better co-operation from the people, this ought to be an easy task."

The city now owns three wagons, and it is recommended that sixty additional ones be acquired, equipped with top extensions, the total cost of which would be about \$16,500. The superintendent of the department believed that several auto trucks should be used as being more economical in certain districts. The efficiency engineers recommended increasing the salary of the superintendent from \$200 a month to \$3,000 per year, the increase being dependent upon the efficiency of the garbage service as measured by its cost. Altogether they recommended the setting aside of \$1,000 per month as an efficiency reward fund. The estimate of \$226,900 is believed to be the reasonable cost of one year's efficient service under a system of direct city collection.

These efficiency engineers are not in favor of civil service for positions in the garbage collection force. In their report they say:

In these days efficiency is so dependent on qualities of character and mental equipment, which are not revealed by the usual examinations, that the measure of practical value of civil service recommendations depends largely on the common sense and good judgment of the individuals comprising the board.

How shall the board determine the efficiency of an applicant for the position of rat trapper or of garbage mucker, or of a labor foreman? The final test of fitness must necessarily be a practical one.

It is stated that when men are wanted there is no one on the eligible list from which appointment can be made, that positions are filled temporarily without civil service examination; that better men can be secured than are found on the eligible list; that inefficient men are kept on the rolls through civil service rules; that the examinations are unpractical and fail to develop the genuine fitness of the applicant, that men who have been temporarily employed without examination have an unfair advantage over other applicants when examinations are finally held, and that favoritism is shown the incumbent.

All that can be asked of a civil service board is to supply an eligible list of candidates, affording to those the oppor-

tunity to win out or fail in the subsequent practical test on the work they desire to undertake.

Good efficient men are not likely to wait on the eligible list six months or a year for appointment to positions. When employees are appointed temporarily without passing the board, and examinations are held several months later to determine the incumbent's fitness the whole civil service program is vitiated. If the incumbent has proved himself capable and efficient and is turned down by the board, an outcry is made against the practical value of civil service examinations. If he is passed and holds the job, other applicants feel that they have been discriminated against.

Some of these objections could be met if no one could be appointed without passing the examination. We see no good reason why the civil service board should not hold examinations whenever necessary to fill positions and on two days' notice.

The practical test on the work should continue for a period of six months before tenure of position is protected by civil service regulations.

In conclusion, S. S. D. Emerson, the vice-president of the Emerson Company, states: "We do not hesitate to say that the sanitary conditions of Seattle, visible to the eye, are far better than in any large city of the United States with which our experience enables us to make a comparison."

HAULING RUBBISH IN MANCHESTER, N. H.

Within the last five years the city of Manchester, N. H., has made considerable improvement in the manner of disposal of rubbish. The four-ton Peerless truck shown in the accompanying cut was purchased by the Board of Public Works some months ago. As a general thing, the truck has proven more useful than the wagons only in cases of long hauls to dumps, although the dollars and cents difference is modified by the fact that the nearer the dump to the city the greater the cost of taking care of it.

As far as long hauls are concerned, the motor truck has proven very valuable. Manchester has, however, been principally successful with the Watson wagons,



FOUR-TON TRUCK OF MANCHESTER, N. H., BOARD OF PUBLIC WORKS.

five cubic yards' capacity, which have decreased the cost of collection and hauling in the ratio of five to two per cubic yard. The annual bill for repairs has been practically nothing.

Manchester has eight wagons, bottom dump; two long sideboard wagons, a single wagon, and a Peerless truck. The nine double teams, including driver and two helpers to each team, 312 days last year at \$8.96 per team, cost the city \$25,159.68; and the Peerless truck, including driver and three helpers, cost \$13.74 per day for the same period, or \$4,286.88. Owing to the fact that the horse wagons and motor truck are each efficient in a peculiar sphere, it is not easy to institute a comparison.

TAX LAW AND ITS ENFORCEMENT

Assessments—Levying of Taxes—Collection of Taxes—
Collection of Arrears—Defective Legislation—
Changes Recommended.

By OTHO G. CARTWRIGHT, Director Westchester County
Research Bureau.

The levy and collection of taxes for the support of governmental activities, primarily one of the simplest of financial operations, has been in many states converted by complex and involved legislation into a travesty on efficiency. Such legislation is, of course, meant for the safeguard of various processes of administration, but usually results in misinterpretation and evasion of it by untrained or incompetent officials. This is particularly true in New York State, where antiquated methods, devised for sparsely settled rural communities, have been kept upon the statute books even after such communities have grown to be populous and wealthy commercial districts. These old laws have been made to stretch over growing conditions by awkward props and bolsters, in the shape of enactments for various localities of special amendments to the general tax law. Such amendments have become numerous and conflicting, and have not squarely met the main problem. The whole tax law structure of New York State nowadays resembles a tottering old building, shored up with many and various forms of braces, which barely prevent its collapse.

That part of the structure, indeed, which deals with the enforcement of tax liens, in case of delinquency in payment—that is, the sale of taxable property for the collection of unpaid taxes, and the transfer of valid titles in such sale—is particularly insecure. It has been broadly claimed by tax attorneys that "tax sale titles in the state at large are generally found by the courts to be invalid." In individual localities, where special laws have been enacted to rectify these conditions, court decisions have been brought to the attention of the writer which have declared such special laws repealed by the consolidated code, and, consequently, it is doubtful now if any special acts dealing with the transfer of tax titles in particular localities (except cities with individual charters), are valid. It is quite certain that, owing to the unreliable character of the usual administration of the tax law by untrained officials, tax liens under the general laws are made invalid through mistakes, omissions, evasions and violations of the complex requirements laid down in such law.

To explain these difficulties in detail is a task requiring more space than could be devoted to the subject. To analyze the tax law in detail, and set forth the various steps that must be taken, is likewise unnecessary for our purpose. It is possible, however, to show in this article the main processes in gathering municipal funds from their chief source, and to show some of the absurdities of the working out of laws which were meant (and perhaps served that purpose in the day of their invention) to expedite and facilitate the collection of all the revenues of the government that come from *ad valorem* taxation on real and personal property.*

The three distinct processes in gathering taxes are

1. The assessment or valuation of taxable property.
2. The levy of taxes.
3. The collection of the sums levied.

ASSESSMENT.

The primary functions involved in these various processes are well known. The full requirements of the

law, however, that have to be fulfilled in carrying out these functions, are not well known. Moreover they are too elaborate and too involved to permit an untrained assessor, taken, as such assessors almost universally are, from the ordinary walks of life, and set at their work with only a few general instructions from the State Board of Tax Commissioners, to make a correct tax roll. It is inevitable that such men, although they may be of the soundest and most practical judgment in estimating the values of the properties which are to be taxed, will, nevertheless, make errors in carrying out these involved and elaborate processes prescribed in the law. One might as well ask a bartender to instruct classes in mechanical engineering in a great university. Individual instances of bartenders achieving a high position of efficiency, at least in the management of political machines, are not unknown in history, but it would not be generally expected that men with such training would be competent to carry out the duties of positions in an entirely different walk of life requiring a high grade of technical training and experience. Nevertheless we continually ask men, whose general fitness consists merely of a practical knowledge of values, to carry into successful execution, so as to create valid tax liens, laws that the most experienced tax attorneys confess themselves at a loss how to interpret. This process is fallacious at the base.

Yet such officials as these have to make out the tax rolls, and on the correctness of these tax rolls depends the validity of all subsequent operations in levying taxes. Such tax rolls are almost certain to be full of errors. Indeed they are continually found to be so. We, therefore, build up upon a foundation of sand the superstructure of levy and collection. Of course, it crumbles. Such is the main general criticism of the assessment of taxable property in New York State and elsewhere where similar conditions prevail.

LEVY OF TAXES.

The tax rolls thus established, however, whether good or bad, are taken by the county board of supervisors and the various values therein set down are equalized; that is, they are theoretically so changed as to make the rate of valuation the same in all parts of the county. Of course, in carrying out this process, the board of supervisors is not infallible, but let us give it the credit for doing its very best. Upon such rolls, then, must be spread the various levies of taxes made by the different boards in various localities who are authorized to make such levies.

Perhaps the worst feature in the levy of taxes is the great number of petty municipalities, or local organizations, that are empowered to incur indebtedness and to levy and collect taxes. Ordinarily, in New York State, such bodies are as follows:

1. The state.
2. The county.
3. The township.
4. The city or village.
5. The school district.
6. A great variety of local districts, incorporated for specific purposes, such as, for the removal of garbage in certain localities, or for local protection from fire, or for local water supply, or for local street lighting, or for anyone of ten or a dozen similar purposes.

Remember that each of these districts levies its own direct tax, the collection of which much be enforced, if necessary. The state tax and township tax are usually re-levied by the board of supervisors, sometime between December and May, at the same time with the original levy of the county tax. These three taxes are spread upon a single roll, and collected by a single tax col-

*No attempt is made in this article to discuss the various other sources of taxation than on real and personal property. Mortgage taxes, transfer taxes, corporation taxes, income taxes, and various other kinds of taxes, which have special processes to enforce their payment, appear not to fall under the same line of treatment as *ad valorem* taxes on real and personal property.

lector for each township. The village tax is levied by the village board of trustees, usually sometime in mid-summer, and is collected by the village tax collector. The city tax is levied and collected according to the time and method set down in the city charter, which varies in the different cities. The school tax is levied by a separate board of trustees for each individual school district, usually sometime in the autumn, and is collected by the school tax collector.

If each of these various districts had territory distinct from all the rest, the matter would not be quite so complex as it is, but they overlap one another, so that the same piece of property may have levied upon it taxes for state, county and town payable to one collector, taxes for the village payable to another collector, taxes for school district payable to a third collector, and taxes for various other districts that lie one upon another upon this property, payable to various collectors. The owner usually does not know when his various taxes fall due nor when he is through paying taxes for the year, nor what his total taxes for the year amount to. He must keep sharp watch if his property escapes sale for delinquency in the payment of some one of the many and various levies. The complexity is not, of course, so great in the less populous counties, but in counties like Westchester, Oneida, Suffolk, Erie, Albany, Monroe, etc., the situation is as I have described it.

The multiplicity of governments, one within another, is a great grievance in the face of attempted simplification and improvement of taxation methods. Schools, even in the smallest rural districts, are under state control, exercised of course through the agency of subordinate local officials. In many features of their administration they are independent of either township, county or village. Villages are likewise independent of county or other local municipalities. Townships have to have their levies validated by acts of the county board of supervisors. The fault, in this respect, seems to lie with the basic political organization. The multiplication of municipalities locally independent of one another is a process tending to increased perplexity and confusion.

If all of the various tax levies were required by law to be validated by the vote of a central board, such as the county board of supervisors or a board of county commissioners, and all such taxes were to be collected upon a single bill showing all the taxes for the year, a great advance would be made. For the convenience of those unable to pay all their taxes at one time, it would be wise to permit the division of the total taxes for the year into instalments, payable at stated intervals, no penalty being added if such payments were prompt. This privilege is used in some states.

The most unfortunate feature of the present system of levy is the uncertainty on the part of the taxpayer, engendered by the variety of different taxes and the varying times of the year when such taxes fall due. The most difficult thing about it all is that, although people readily admit the inefficiency and inconvenience of such conditions, there seems to be some unaccountable barrier between the granting of such admission and the development of the conclusion that it would be very wise and very easy to change present laws and conditions, so as to bring about such simplification and such improved methods. Even where such conclusion has finally been arrived at, there seems to be a further barrier of an osseous nature between the reaching of that conclusion and taking the action necessary to put it into effect.

THE COLLECTION OF TAXES.

The generally accepted theory of the collection of taxes contemplated some such working out as follows:

1. Serve notice upon the taxpayer that taxes are levied and due.
2. Grant him a specific time, usually 30 days, in which he may pay his taxes without penalty, except a slight compensation for the collector.
3. At the expiration of that time, add a penalty for tardiness.
4. At the expiration of a reasonable time, serve notice that the delinquent properties will be sold if taxes are not paid on a certain day thereafter.
5. Sell at a stated time at public auction the delinquent properties to the highest bidder, pay the municipality its tax lien, and return to the owner the surplus over the cost of the sale.
6. Allow the owner a reasonable time in which he may redeem the property by paying the tax lien and costs and interest.
7. At the expiration of such time, make permanent the title to properties transferred by such sale, which are still unredeemed.

This general plan is supposed to supply the government at a stated time with the funds which it has been authorized to levy for its support; to protect the interests of the taxpayer; and to guarantee the purchaser of delinquent property a due return for the funds which he has advanced to meet his delinquent neighbor's obligations to the government.

It is a simple theory, and it would seem that simple laws, plainly stated would be sufficient to work it out; and yet, in the effort to bring about the objects aimed at in this theory, we have placed upon the statute books a most complicated system of laws, not only containing gross absurdities, but also filled with puzzling and conflicting prescriptions that a proverbial Philadelphia lawyer cannot interpret.

Illustrations of some of these absurdities follow. For example, the New York State law prescribes that notice of his taxes shall be served upon the taxpayer by publication, either by bulletins posted in public places, or by an announcement in a local newspaper, if there be one, stating when and where taxes are payable. So the taxpayer must continually watch the bulletin boards and obscure corners of country newspapers to find such notice, or else suffer the injustice of letting his taxes run until the penalty of tardiness is added.

The law does not require that tax bills shall be sent to each taxpayer, and the consumption of time and energy, in finding the time when, the place where, and the person to whom to pay, often amounts to more than the added penalty for tardiness. Therefore, many taxpayers "abandon in disgust this time-consuming process and let the taxes go to sale, as costing less in the end than the trouble and expense of the present method of paying them."

"The collection of taxes is plain financial business. Contrast the method under discussion with that of an enterprising modern business corporation. Imagine one of these business houses depending upon a bulletin-board notice, or an advertisement in an obscure corner of a newspaper that accounts are due at a certain time and that the details may be learned by calling at the company's office! Imagine such a business house changing its place of business and its cashier and clerical force every time a customer has a payment to make! Prompt payment would scarcely be expected under such management, and the customer would think such changes good excuse for delays.

"The business house sends its patrons bills at regular intervals and collects closely and promptly. Our local governments require the taxpayer to ascertain anew each year when, where and how he can learn the amount he owes, and where, when and how he can pay it. Is it good business for the government? Is it helpful to the taxpayers?"

Experience shows the value of sending out tax bills. This practice is followed in some states and in some cities. It is followed in three of the nineteen townships of Westchester County. This action in Westchester County is, of course, voluntary with the municipalities, and is not required by law, but its efficiency in the closeness and promptness of collection is shown by the following list of towns and the percentages of the total taxes collected in these towns before the collector turns over his tax roll to the official whose duty it is to sell the delinquent properties for unpaid taxes:

Rye	97.3
Ossining	96.6
Cortlandt	95.2

Compare with these other large towns of Westchester County which do not send out tax bills, but notify the public in the manner required by law. They are as follows:

Eastchester	85.4
Greenburgh	87.7
Harrison	82.4
Mamaroneck	85.1
Mount Pleasant.....	82.
White Plains.....	81.5

The average delinquency of the total taxes in the towns sending out tax bills in less than four per cent. The average delinquency of the towns not sending out tax bills is about sixteen per cent. of the total tax. In other words, the delinquency is four times as large where tax bills are not sent out as it is where they are sent out. Westchester County is by no means an isolated illustration of this principle. The same thing may be found everywhere where the two processes can be compared. Why, then, should not every collector voluntarily adopt this method, get his taxes in promptly, close up his books, make his return to the supervisor, or to the county treasurer or auditor, as the law may require, and receive his compensation promptly?

In the answer to this question lies, perhaps, the greatest absurdity in the process of collection.

The law allows the collector of taxes to charge the taxpayer, as his compensation,

- a. One per cent. upon the face of each tax that he collects inside of a period of thirty days after public announcement that the taxes are due.
- b. Five per cent. on all taxes which he collects after the expiration of thirty days.
- c. Two per cent. on all taxes which are unpaid at the time when he is required bylaw to retuprn his roll and warrants.

The purpose of this law was originally to induce the taxpayer to be prompt, and thus avoid the five per cent. penalty.

It does not work out that way, because the collector, realizing that it is five times as much to his interest to put off his collection for thirty days as it is to receive taxes before the expiration of that time, takes no pains to notify the individual taxpayers of the beginning of the thirty-day period. He does what the law requires of him, by publishing his notice, and lets the matter rest with that. Of course he is disappointed by those lynx-eyed taxpayers who ferret out the time when taxes are due, and thus deprive him of four-fifths of the commission that he would otherwise receive.

For example, suppose that a town's total tax levy is \$50,000.

For collecting all of this within thirty days the collector would receive \$500, one per cent.

For collecting it all after thirty days, he would receive \$2,500, a good annual salary.

If he were able to collect none of it, but returned it all as unpaid, he would receive from the municipality two per cent., or \$1,000.

So the absurdity lies in the fact that under this law it

is more to the collector's interest to return his entire tax unpaid than it is to collect anything promptly, and it is most to his interest to collect it all between the expiration of the thirty-day period and the time when his return is due. The regulation of collectors' fees, so that, without giving him the incentive for delay, he might still place a penalty upon the delinquent taxpayer and let that penalty go to the municipality instead of the collector, is a very important and much needed reform.

COLLECTION OF ARREARS.

The transfer of valid titles by the sale of delinquent properties, particularly real estate, is another feature that needs grave consideraion at the hands of those who are endeavoring to place better tax laws upon our statute books. The theory of such tax sales is that clear title to the property itself is forfeited by failure to pay its fair share to the support of the government; and, being worth a great deal more than the tax which is levied upon it, the property is ample security for the payment of that tax. It should readily sell at public auction for a sufficient amount of funds to pay the tax. Therefore, it is usually a part of the tax law that if there should chance to be no one who would bid the amount of the tax and its penalties, the municipality itself must take over the title to such property and hold it for such tax, disposing of it afterward as it sees fit, unless the owner redeem it in the regular period allowed by law. The theory seems to be sound enough. It fails, however, when the processes leading up to the sale have been so erratically carried out that the tax lien is shown upon court review to be invalid.

There is already set forth in this article an account of the prevalence of such invalidity in the state of New York, due to the work of unskilled officials in the execution of complex and elaborate laws. It is almost inevitable that it should be so. Therefore, when it comes to public auction of tax titles, past experiences with such titles having created a very weary public, and few buyers are found willing to invest good money in such purchases. Consequently delinquent tax properties are repeatedly purchased by the municipality, year after year, and the amount of the delinquency is reassessed upon the good citizens who have already paid their own taxes and must now pay a proportionate share of their delinquent neighbors' taxes, also.

Doubt has been expressed by attorneys with intimate knowledge of tax matters in New York State whether there be any considerable number of tax rolls in the state of New York, outside of the cities, that are properly made out. If this doubt were substantiated, no one assessed upon such rolls could be compelled by a court of justice to pay his taxes upon the basis of such invalid assessment. In other words, under such conditions most of us might legally avoid the payment of taxes until the assessment rolls are made out in compliance with the law. Only patriotism, therefore, or perhaps only inertia on the part of the public, permits the government to go on financing itself upon this broken-down system.

There are two methods used in various parts of the country in collecting arrears of taxes by the sale of delinquent properties. One is by administrative processes entirely; the other is by judicial procedure. In the one, where no court judgment is pronounced, but the properties are simply advertised and sold by administrative officers according to the prevailing laws, the titles are the less secure. The court is, of course, the final arbiter in the determination of the validity of a title, and, therefore, to quote the Hon. Lawson Purdy, Tax Commissioner of New York City, "where the tax sales are conducted by administrative processes entirely, the courts are interested in finding holes in the procedure, and readily find

them." But where the tax sale is conducted by first bringing delinquent properties under the judgment of the court, and then conducting the sale upon an order of that court, the court is, of course, interested in sustaining its own procedure and in upholding the titles upon which it has so pronounced. In states where property is sold by proceedings in rem, leading to the judgment of a court which orders such sale, the tax titles thus transferred are upheld by the courts right and left.* It would seem, therefore, that such process commends itself as the superior one in the light of both reason and practical experience.

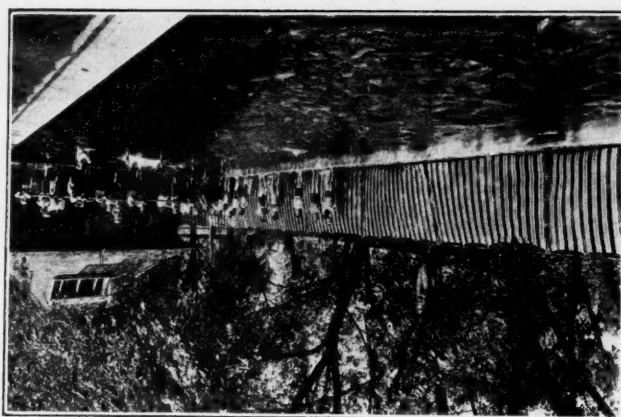
Tax reformers in the state of New York during two annual conventions already held in this state, have centered their interest in problems bearing upon the form of assessment rolls, upon determining various kinds of property which should be taxed, and upon various processes of assessment and levy. The collection of arrears and the transfer of valid tax titles have so far been neglected at these conventions. It is one of the most important things for such a body to consider. It is one of the most important things upon which the legislature itself should take the initiative without any promptings from such civic organizations.

A community's arrears of taxes are counted among its current assets. If they are collectible, such accounting is correct. If they are uncollectible, such accounting is incorrect, and the arrears of taxes should be stricken out from the list of the assets of the municipalities. There is no excuse for carrying in the accounts of a municipality, any more than in the accounts of a private firm, the valuation of an asset that does not exist. The courts would call it fraudulent misrepresentation on the part of a private business firm. Why is it not fraudulent misrepresentation on the part of a municipality?

It ought to be possible to simplify the situation by an entirely new tax-law, reducing the complexity of the old law, and reducing the machinery of administration to its simplest form, its lowest cost, and at the same time to its highest efficiency.

PUBLIC OUT DOOR SWIMMING POOL.

The city of Poughkeepsie, N. Y., has constructed in one of the play-ground parks a swimming pool, consisting of a concrete tank and a bath house. The tank is fifty-five feet long, twenty-two feet wide, with a depth of water of 3.5 feet at one end, and 6.5 feet at the other. The water is supplied from the city mains.



INTERIOR VIEW OF POOL.

The equipment of the pool includes a bath house with a locker room and shower bath room, where every participant is required to take a hot shower before enjoying the pool.

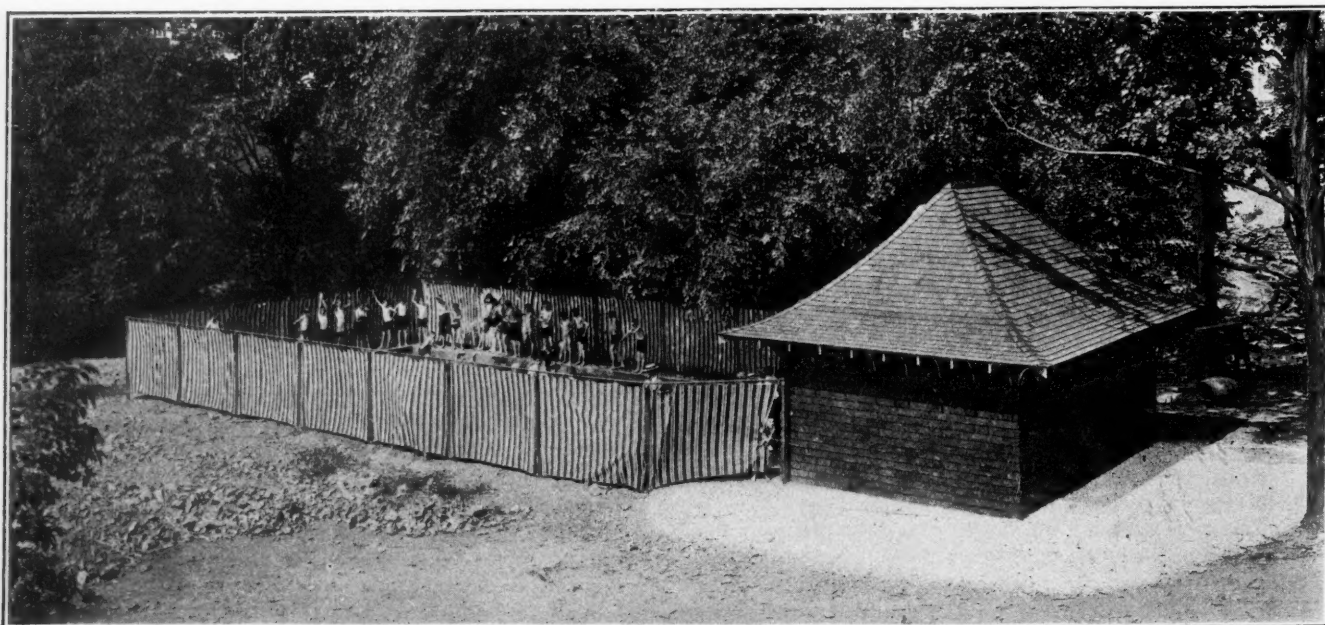
The pool is at all times under the supervision of an attendant. It remains open from 9 A. M. until 11 P. M. On three afternoons each week the pool is set aside for the girls, when a lady attendant gives lessons in swimming.

The plan, as carried out by the Board of Public Works, has been entirely successful. The total cost was \$3,500.

TACOMA'S MUNICIPAL MARKET.

One of the public markets of the city of Tacoma, Wash., has been undergoing extensive improvements, the chief of these being the construction of uniform stalls or standards for every dealer renting space in the market. Thirty-four new stands are being erected, in which the sanitary feature will be especially prominent.

These stands are 11 ft. 4 in. long, 5 ft. high at one end and 2 ft. high at the other, giving a sloping stand 8 ft. deep for its full length. The entire stand is raised above the street level more than 18 inches, this permitting the washing out of any refuse matter that might gather beneath the tables and facilitating the daily cleansing of the entire market. The stands are painted white, which is more apt to insure their being kept clean. Since the announcement of the construction of these stalls there has been an increasing demand for space in the market.



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Contributions suitable for this paper, either in the form of special articles or of letters discussing municipal matters, are invited and paid for.

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SEPTEMBER 5, 1912.

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A Novel Municipal Exhibit.

The Department of Public Works of Philadelphia is to hold for two weeks, beginning about Oct. 7, a popular exhibit which will be confined to matters connected with the water supply, especially the use and abuse of water by consumers. The primary object of the department in holding this exhibit is to educate the people of the city in regard to the civic questions involved in this matter. Those familiar with the situation have long been apprehensive of the results from the waste of water in Philadelphia, which is almost unprecedented. About 210 gallons of filtered water are furnished daily to each man, woman and child in the city, and the department officials feel certain that two-thirds of this is literally wasted.

The exhibit, which will be suitably housed in booths, will comprise devices, apparatus, charts, models and other physical objects pertaining to water use and abuse.

There have been a number of exhibits of water works appliances given in connection with society conventions, and a few cities have given, in connection with budget exhibits, information of somewhat the same nature as this, but covering the entire field of municipal activities; but we believe it is unique for a city to give an exhibit confined to its water works, and especially with the aim

in view of reducing water waste by the information which the citizens may obtain therefrom.

This exhibit is in charge of a public committee which consists of the following: John G. Fleck, president Plumbing Supply Association of Philadelphia; Powell Evans, authority on fire waste, Merchant & Evans Company; Mrs. Frank Miles Day, 1st vice-president Civic Club; J. W. Ledoux, chief engineer American Pipe & Construction Company; J. Harvey Borton, general manager Haines, Jones & Cadbury Company; Mrs. Edwin C. Grice, president Home & School League; Chas. W. Masland, manufacturer of carpets, and Miss F. Arline Tryon.

Fire Hydrants in Louisville.

In our issue of July 11 we published the first of three articles relative to the spacing of fire hydrants, and in this classed Louisville, Ky., as the lowest of the fifteen largest cities of the country in frequency of fire hydrants, these averaging only $3\frac{1}{4}$ hydrants per mile. We have been informed that, while the figures are correct, the inference which we drew from them does injustice to Louisville, since in that city hydrants are rarely used for supplying water to the steamers, but a cistern is located at each street intersection in the congested districts, these cisterns being fed by large water mains and having capacity that four or five engines at one time can take such suction from each cistern.

We are glad to be informed of these facts and to publish them in justice to Louisville.

An Unsatisfactory Imhoff Tank.

A great deal has been published in this Journal and in others during the past two years concerning the Imhoff tank, which is being used generally throughout the Emscher district in Germany and has been constructed in a number of cities in this country and is already in operation in several of them. Most of the matter published has been favorable to the tanks, but a criticism has recently been written by an American physician who has been investigating the system in Germany—Dr. Martin J. Synnott of Montclair, N. J. He found at Königs-Wuster-Hausen an Imhoff tank which "gave off a very offensive odor and the effluent discharged was blacker and dirtier looking to my eyes than the inflow. Here, to make the system a success, it will be necessary to receive the effluent discharged into a basin and pump it thence through a sprinkler over a coke or slag clinker mound, with the purpose of changing, through bacterial action, the colloidal solution into suspended matter again. The effluent discharged will then pass into another Imhoff tank where this suspended matter will finally be gotten rid of." The reason for this unsatisfactory condition Dr. Synnott believes to be the fact that decomposition had set in before the sewage reached the tank, and colloidal matter had formed in the sewage by reason of this decomposition, the result being a failure of all the organic matter to settle out in the tank and also the presence of objectionable gases in the sewage.

This limitation of the Imhoff tank was referred to by us several months ago in an article on the subject, and this actual demonstration of it referred to by the investigator in question serves merely to emphasize the fact that perfectly satisfactory results cannot be expected from the Imhoff tanks alone when sewage is not brought to the tanks in a fresh condition. But the use of sprinkling filters in connection with such tanks is by no means a new idea in this country, and this "failure" will not excite much alarm among those versed in sewage disposal matters.

SURFACE WATERS IN CITIES

Legal Decisions in Various States Concerning Responsibility for Flooding Property by Grading and Draining, and Rights to Do So.

By J. SIMPSON.

Surface waters may be defined as waters collected on or temporarily flowing over the surface of the ground, of a casual nature and coming from a casual source, such as rains or melted snow, and which are lost by diffusion, percolation through the soil or evaporation. They are distinguished from water-courses, which, it is agreed, are streams flowing in a definite direction and from lakes and ponds, which have a permanent character as distinguished from the temporary existence of surface water.

The common-law rule regards surface water as a common enemy, or rather as a common nuisance, which each owner has the right to fight against as best he may, provided he does no act inconsistent with the due exercise of dominion over his own soil. This rule practically gives the owner the absolute right to take all measures necessary to protect his property by damming the water back, or otherwise, even if in so doing the water should be thrown back upon the adjoining or higher land. The owner of such higher land has no cause of action. Applied to property within municipality limits this rule gives the corporation itself the right to improve its streets by grading; even if, in so doing, the abutting owner sustains damages by the collection of surface-water upon his property. Such damage is regarded as *dammum absque injuria* and affords the abutting owner no cause of action. On the other hand, the owner may take such steps as he considers proper either to prevent the encroachment of surface-water or to turn it away from his property upon the street or highway, provided he does not interfere with the use or enjoyment thereof. The municipality would, of course, be liable for damages caused by carrying out the work in an unauthorized or negligent manner. The city owner may, under the rule, improve his property by bringing it up to grade or otherwise, and will not be liable to an adjoining owner although in so doing he diverts or prevents the flow of surface water over his lot and casts it upon that of the adjoining owner. And city lots owned by a municipality of course also come under the rule. The municipality may, in the same way, raise them to grade without liability. The common-law rule has been adopted in Connecticut, Indiana, Kansas, Maine, Massachusetts, Minnesota, Missouri, Mississippi, Nebraska, New Hampshire, New Jersey, New York, South Carolina, Rhode Island, Vermont, Virginia, Washington and Wisconsin.

Some states have adopted the rule of the civil law, whereby the lower or servient proprietor is obliged to receive from the lands of the upper or dominant proprietor the surface waters naturally flowing therefrom and cannot, in attempting to prevent such flow, cast it back upon the higher land. Under this rule municipal corporations are not entitled to obstruct the flow of surface water from adjoining lots by changing the grade of streets. The civil-law rule is followed in the States of Alabama, California, Georgia, Illinois, Louisiana, Maryland, Michigan, Nevada, North Carolina, Ohio, Pennsylvania and Tennessee. The reason for the adoption of the civil-law rule is found by some courts in the maxim *sic utere tuo ut alienum non laedas*, and by others in the natural situation of the lands and the necessity of finding an outlet for the escape of surface waters according to the maxim *aquae currit et debet currere ut solebat*. But in many jurisdictions where the civil-law rule is in force, an exception seems to have

been made in respect to urban properties. In Pennsylvania it has been held that where several purchasers of a piece of ground subsequently divide it into lots, upon each of which a house is built, and partition made of the property, each lot owner must so regulate his own lot that his surface water shall not flow upon that of his neighbors, and his neighbors may erect obstructions to turn back such flow of water without giving a cause of action.

There is, of course, a vast difference between preventing the flow of surface water upon one's land and collecting it in quantities and casting it upon the land of another; and neither under the common-law nor the civil-law rule is it held that the owner of land upon which there is surface water has the right to collect it in an artificial channel, such as a ditch, and discharge it upon another's land in quantity exceeding what would have been carried there by natural drainage. This rule applies to municipal corporations. Such corporations have no right to collect surface water in the course of their street drainage and discharge it upon the lands of adjoining lot owners. The rule also applies where the municipality is engaged in constructing street improvements, such as grading the street, and diverts surface water from its course and throws it in large quantities upon the adjoining property.

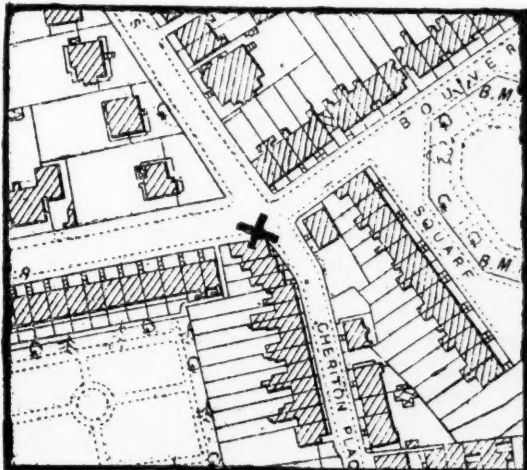
A recent Missouri case illustrates the distinction between positive acts and mere non-action on the part of the municipality. The grade of the streets and alleys on which the plaintiff's property was situated was from ten to twenty feet below the natural surface at that immediate part of the city. In grading the alley the effect of frost and thaw upon banks of earth thrown up was to wash them into the alley so as to form a dam for the surface water, which was thereby run into the basement of the plaintiff's building and flooded her floors to such a depth as to destroy her heating plant. She recovered damages from the city. The court said in the course of its opinion that the owner, while grading it down for building purposes, had a right to protect it from the surface water by leading such water into a street or alley in the absence of any municipal regulation in that respect. *Bowen v. Kansas City* (1910), 140 Mo. App. 695. In an earlier case a city was held liable for piling stone in a street gutter, causing an overflow of surface water onto the abutting property. It was said that the principles of law as to surface water, as understood in Missouri, had no application to the question. The city was not attempting to deal with surface water, but negligently obstructed the gutter provided to lead off the surface water. *McInery v. City of St. Joseph*, 45 Mo. App. 296. The principles of law referred to were discussed in *Rychlicki v. City of St. Louis* (1889), 98 Mo. 500, where the question was whether the city might, in the construction of its streets, collect surface water and then by means of drains and conduits discharge it in volume upon the land of an adjoining owner. It was considered to make no difference whether the question was tried by the rule of the civil law or the so-called common-law rule. The result was the same, both lines of decisions ruling against the city. The city, it was said, might grade and improve its streets without being liable for injuries arising from the incidental interruption or change in the flow of the surface water, except such injuries as might arise from the negligent doing of the work. But it has no right to discharge the water thus accumulated upon adjacent lands in a body. The theory then expressed is practically that which is generally received to-day, although a vast number of confusing decisions have been pronounced. A somewhat earlier Missouri case relates to the city's duty

to maintain the curbing and guttering of a street in repair and involves the Missouri courts' theory of liability where an act of God concurs with negligence. A city, it was held, is only liable for the want of ordinary care in providing and maintaining sufficient curbing, guttering and sidewalks; but if, by reason of the want of such ordinary care and prudence, the curbing and guttering become defective and out of repair, and this defective condition becomes an active agent commingled with the act of God in producing damage to property, the city will be liable. *Haney v. City of Kansas* (1887), 94 Mo. 334.

As to non-liability for passive inaction on the part of the municipality, another Missouri case, *Imler v. City of Springfield* (1874), 55 Mo. 119, 126, lays it down that it is not the duty of a city, in grading its streets, to keep a drain or gutter open while the work was being done, so as to prevent the flow of the surface water of the street in and upon the premises of an adjoining owner, and the city is not liable for the flooding of such premises thereby. That case cited with approval *Wilson v. Mayor of New York*, 1 Denio 595, where the plaintiff owned property at the corner of a square, and thus bounded on two sides by streets. The surface water could conveniently run off plaintiff's property, leaving it dry and uninjured. The city graded both of its streets on the sides of the plaintiff's lot, thereby wholly obstructing the flow of the surface water. It accumulated upon the plaintiff's lot, the city having failed to construct a ditch or sewer by which the water could be carried off. It was held that the plaintiff had no remedy against the city. In both of the cases last mentioned it was charged that the street had been so carelessly graded as to prevent the flow of water from the premises. As a general rule negligence of the municipal corporation in constructing or maintaining its streets, etc., whereby adjoining property is injured takes the case out of the rule as to surface waters, as we have seen in the case of *McInery v. St. Joseph*, mentioned above, and renders the municipality liable. This is sustained by numerous cases.

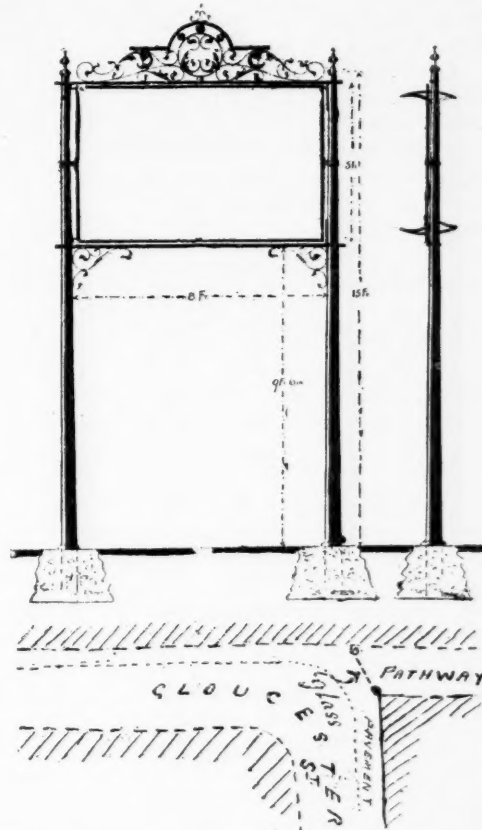
MIRRORS AT STREET CORNERS.

An idea which, it is believed, has not been introduced in this country is reported from England, the object of which is to prevent collision of teams at street intersections or angles. This consists of a mirror fixed on a building or supported on posts at such an angle that those driving teams or automobiles toward the intersection along either street may have a view of the intersecting street. A. E. Nichols, borough engineer at



LOCATION OF STREET MIRROR AT FOLKESTONE.

Folkestone, states that he fixed a reflector 24 inches square at a street intersection, this reflector or mirror having cost \$7.50. This was supported on a standard of 1½-inch gas pipe set in the ground. This mirror is occasionally cleaned by the lamp-lighter when cleaning the



STREET MIRROR AND SKETCH OF LOCATION, MALMESBURY.

lamps. The mirror used in this case was a plain, flat one, but Mr. Nichols suggests that they would be of greater value if slightly convex, in order that a larger area could be observed than is possible with a flat mirror.

At Malmesbury, according to Borough Surveyor Chas. Bowman, a mirror has been erected on two pillars spanning a pathway at a dangerous turn, as shown in the illustration. This requires scarcely any cleaning, being wiped off about once in three months, but "is not of much use on a foggy or frosty morning, until the sun or rain has been on it for a few minutes." In each case the engineer states that there have been no accidents at the corners in question since the mirrors were established.

OIL SHALE ROADS.

William Petersen, Professor of Geology, Utah Agricultural College, recently stated in an address that in Idaho there is a bed of black shale containing more than two per cent. of oil, which is more than fifteen feet thick; which material he believes to be the equal of anything obtainable for road making. It needs no crushing, will pack together firmly, is very resistant to both wear and pressure, and would be practically dustless. Good oil shale beds are, he said, found quite abundantly in Wyoming and parts of Utah. One bed in the latter state consists of a soft sandy shale which contains about 3½ per cent. of oil having a heavy asphalt base; which material, when heated to about 225°, can be rolled without crushing.

PAYMENT FOR IMPROVEMENTS.

Methods Employed in Boston, New York, St. Louis and
Utica—Last of These Recommended After
Twenty Years' Test.

In a letter to the Utica Daily Press, Geo. C. Warren, of Boston, formerly a resident of Utica, compares the method of paying for the construction and maintenance of street improvements in that city with the practice in other cities; the letter having been suggested by papers read at the National Conference on City Planning. These methods and Mr. Warren's comments upon them are as follows:

In Boston the cost of the first improvement is assessed on the abutting property and all subsequent repairs and renewals are paid for from the general budget. The results are:

First, the almost universal tendency of property owners to accept the cheapest form of roadway and sidewalk construction which can be laid. In connection with the opening of a street in which I am interested the other abutters favored gravel roadway and sidewalk, and when I protested that this class of construction is entirely inadequate to meet modern traffic conditions they said: "But the city must keep the road in repair and if later a better class of improvement is necessary we will not be assessed for the cost."

Second, there are so many miles of roadway thus inadequately improved that it is impossible for the city, out of its limited tax budget and limit of bonded indebtedness, to lay modern pavements to anything like the extent they should be laid to meet present traffic and economic conditions and at the same time meet the enormous expenses necessary to keep the old roadways in safe, passable condition.

New York City has much the same law as Boston with respect to initial assessments and subsequent maintenance of the pavements with the result, like Boston, that almost universally the initial pavement adopted was gravel or stone macadam and other cheap type of construction.

New York, however, has more generally succeeded in the reconstruction of pavements with those of more modern type, but has done this through the issuance of millions and millions of bonds for long terms of years—very much longer than the reasonable life of pavements under the prevailing traffic conditions; until now it has been publicly stated that New York has many miles of streets which have been reconstructed two and sometimes three times out of the proceeds of such long time bond issues the first of which successive bond issues are not yet paid for.

In St. Louis the entire cost of all street pavements and renewals is assessed on the abutter and the contractor is given "tax bills" against each individual parcel with interest at seven per cent. Although the interest is at a high rate, and although the tax bill is a lien which takes precedence over mortgages and all other such liabilities except city taxes, thus providing the very best security, the tax bills are not salable, except at a heavy discount, because investors generally do not want to carry paper, the collection of which requires so much red tape, and which is issued in such odd amounts (many of them quite small) payable in annual installments.

These are three extreme examples of what seem to me to be very unwise systems of financing public improvements. Between them there are all shades of variation in vogue, some of them such that the contractor has to discount the municipal paper given him in pay-

ment of his work as much as 15 per cent., all of which, it is needless to say, comes out of the pockets of the taxpayers in either higher cost of work or poorer construction, or both, and certainly provides a most unwise system of finance.

Contrast this with the safe, sane, equitable, easy system now in vogue for 25 years in Utica and note the practical result under that system, which briefly stated, is as follows:

1. The city pays one-third the cost of all original pavements and all renewals thereof and provides for this out of the annual tax budget, the paving fund thus created being an annual tax of less than an average of \$1 per capita of population, which is not enough to hurt any.

2. The remaining two-thirds of the cost of original pavements and all renewals is assessed on the abutting frontage, each individual person assessed being given the option of paying the whole or any part of his or her assessment in cash or deferring payment for six annual installments with six per cent. interest. To cover the deferred assessments the city issues six paving bonds, each for one-sixth of the whole amount of such deferred assessments, and payable in one, two, three, four, five and six years with five per cent. interest, the due dates of the bonds and assessments being co-incident. The city loses nothing on account of the credit it gives to the taxpayers and the premium the city gets for the bonds and the one per cent. extra for interest charged the taxpayers fully pays all clerical or other expenses of the city in the transaction.

3. The city at large pays for minor repairs required between the time of laying the original pavement and the necessity of reconstruction or resurfacing.

The result of this system after 20 years practical trial (the varying charter amendments covering the system having been enacted, as I remember the dates, between the years 1886 and 1902), is that there are few cities in the United States and Canada which, as a whole, are as well paved to-day as is Utica, practically every street in the city now having a modern pavement and the work having been done so easily and steadily that no one has felt the financial burden.

The practical working out of the system can be illustrated by the typical result on Oneida street, on which I am interested as an abutting taxpayer. In 1892 the street was newly paved at an annual cost of about \$200 per lot of 50 feet frontage, the assessment being payable in cash or at the option of each taxpayer in six annual installments of about \$33, with interest, say \$35 per year for six years including interest. The last installment of the assessment was paid in 1898. Then came 13 years respite and in 1911 the street was resurfaced at a cost of about \$90 for each lot of 50 feet frontage, or if any desired to pay in six annual installments at a cost including interest of less than \$16 per annum. It should be here noted that all this—a thoroughly well paved city—has been accomplished by a general tax of less than one dollar per capita per annum.

Of course it may be properly said that in larger cities where traffic is more congested, the relative cost would be somewhat greater and the necessity of pavement renewals more frequent; but it may also be said, in answer, that the renting and selling values in the larger cities are enough greater so that the relative burden of such a system could be no greater than in smaller cities.

My contention is that the Utica system of financing for pavements is, with modification, easily and equitably adaptable to other cities and to nearly all other factors of the broad matter of "City Planning"—parks, boulevards, pavements, sewers, shade trees, etc.

NEWS OF THE MUNICIPALITIES

Current Subjects of General Interest Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Fire and Police Items—Government and Finance.

ROADS AND PAVEMENTS

DuPont to Resume on State Road.

Wilmington, Del.—T. Coleman duPont has announced that he will proceed at once to clear the right of way for the State-wide boulevard in the lower part of the State. Recently it was announced that the boulevard suit would be appealed to the United States Supreme Court. The time for taking the appeal expires Sept. 19, but duPont said he would not wait until that time to go ahead.

Kansas Women Build Road.

Leana, Kan.—Women wielded sledge hammers to break rock for the building of 800 feet of roadway in Leana. Undaunted by the refusal of the men of the town to take up the work of building the thoroughfare, the women enlisted the aid of small boys and unemployed men of neighboring towns, paying the visitors for their work out of their "allowances." A number of the women also put on "jumpers" and helped unload wagons containing the road material obtained in the vicinity.

Work Being Pushed on Fordway Bridge.

North Billerica, Mass.—The preparatory work on the proposed Fordway bridge at North Billerica is being pushed ahead as rapidly as possible. At the present time a cofferdam is being formed on the southerly side of the bridge. After the dam is completed the water will be drawn out and the abutments will be installed. When completed the bridge will be one of the best in this vicinity. It will be 55 feet wide and will have sidewalks on each side. The C. R. Gow Co. has charge of the construction.

Citizens Relocate and Build Road.

Rusk, Tex.—A novel plan has been adopted by the citizens of Rusk to secure the opening of a new public road. A few weeks ago the Young Men's Business League appointed a committee to lay out a nearer and better road between Rusk and Atoy Valley, a prosperous community about ten miles east of Rusk. The committee reported that a much better road could be had by opening up a new road for about three miles, shortening the distance and avoiding some deep sand beds. The league then appointed a committee to arrange for the opening of this new road, as a result of which every business house in Rusk promised to close on the day set for road work and practically every citizen of the town signed an agreement to be present and assist in the work. The ladies were also invited and a basket dinner was served.

Consider New Road One of the Best.

Milwaukee, Wis.—One of the best highways leading northwest from Milwaukee is the new Fond du Lac road, which for twenty-five miles is now in good shape. The Menomonee Falls Good Roads Association is actively engaged in making improvements on this road from Menomonee Falls to the village of Meeker in Washington county. The Vanderbilt cup races will be run over the new and old Fond du Lac roads, thus insuring permanent improvement of the new Fond du Lac road from the city limits to the town line of Granville, where Chairman Henry S. Schultz, a progressive good roads man, has attended to the improvement of the road through to the Menomonee line, the result being that even with the excessive rainfall of the last three weeks,

the road is in good shape. In the town of Menomonee, Chairman C. G. Birkhauser has surfaced and dragged the road wherever it needed attention, the road machinery having kept busy in the work. After every rain the road drag has been used, and many who in the beginning doubted the effectiveness of the drag, now are fully convinced that the implement can do all that has been claimed for it.

Design Shows Asphalt Paving Methods.

Sacramento, Calif.—An instructive design of three of the most modern methods of street construction has been prepared at the suggestion of Commissioner of Public Works Wilder and posted on one of the walls of the Council Chamber. It shows the various styles of asphalt construction. One is the asphalt macadam pavement with asphaltic concrete throughout, another asphalt pavement with asphaltic wearing surface, and asphalt concrete base, and the third asphalt pavement with asphaltic wearing surface, asphaltic binding course and hydraulic cement concrete base. Either one of the three is preferred by the Commissioners to the oiled macadam.

Viaduct Eliminating Grade Crossing.

Montclair, N. J.—After being closed to vehicular traffic for more than seven months, that section of Bloomfield avenue between the Glen Ridge line and Bay street, Montclair, will be reopened to the public within a short time. During the period of non-use the thoroughfare has been filled in at both sides of the Lackawanna Railroad and carried over the railroad tracks by means of a bridge, thus eliminating what was considered one of the most dangerous grade crossings in the state. The work was done by the railroad company in connection with the new terminal now nearly completed in Montclair. The cost of the improvement is estimated at about \$60,000. The tracks of the Public Service Railway Company were laid on the new viaduct about a month ago, since which time the company's cars have been run over it. A temporary track, now abandoned, was laid around the improvement through Glenfield County Park, while the work was in progress. The viaduct is to be paved and sidewalks laid before all the work is completed. Work on the new viaduct was begun in November last. To complete it has required filling in with many thousand cubic yards of dirt and the building of immense concrete retaining walls. More than 60 trains a day pass under the new viaduct and more than 400 trolley cars pass over it. When opened to all vehicles, it will be crossed by at least 1,000 wagons and automobiles each day.

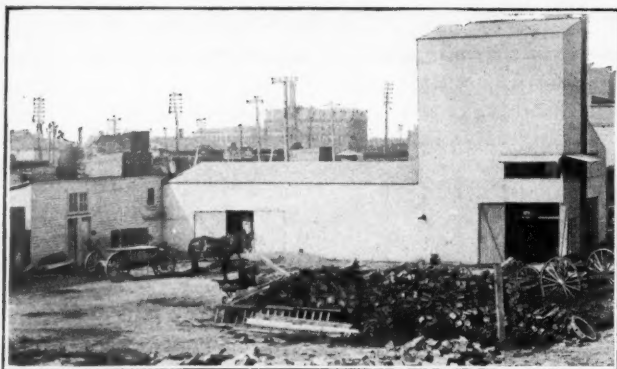


Courtesy Newark Evening News.

GRADE CROSSING REMOVED AT MONTCLAIR.

Erie's Municipal Asphalt Plant.

Erie, Pa.—The accompanying picture shows the new city asphalt plant recently completed. The erection of the plant.



Courtesy Erie Daily Times.

ERIE'S NEW ASPHALT PLANT.

which is said to be one of the best plants for mixing asphalt in that part of the country, was in charge of Frank J. Rehm, who was appointed superintendent at its completion.

Season's Paving in Philadelphia.

Philadelphia, Pa.—In a statement showing that the highway bureau has executed 336 paving and grading contracts amounting to \$2,449,328 since the new administration came into control, Chief William H. Connell announced that before winter arrives he expects to pave the streets in front of all schoolhouses and hospitals with wood block or asphalt. Councils made an appropriation for wood-block paving in front of hospitals and such other places as the department deems advisable. Chief Connell said that he has found that he will have enough money for streets in front of schools as well as hospitals and will endeavor to have the work completed this summer and fall. Following is a statement of the work under contract or completed:

No. of Cont.	Kind of Work.	Amount.
132.....	Asphalt	\$1,208,368
38.....	Grading	311,441
16.....	Wood block	275,522
20.....	Bituminous	245,658
36.....	Stoning	138,091
20.....	Granite	180,049
24.....	Brick	90,199
336		\$2,449,328

Chief Connell said that there is approximately \$1,000,000 not under contract. Specifications for work which will require that amount of money are being prepared and contracts will be awarded within a short time. The only work authorized by councils which will not be under way or completed before winter is some paving and grading which cannot be undertaken until sewers and other underground work are completed.

Street Improvement Includes Terracing.

Petersburg, Va.—East Washington street, a street on which travel is heavy, is being put into good condition. The street department now has at work a force of men, plowing up and laying on a new gravel surface. The work at present is being done between Sycamore and Jefferson streets, and as soon as this is completed the roadway will be extended on to the hospital. When the work is completed and the street becomes sufficiently packed, it will be oiled. The improvement of the street between Jefferson and the hospital contemplates the terracing of the ground between the fences on the property line, on each side of the street to a point 25 feet from the fences. This will give the street a width of 30 feet and parkways and sidewalks on either side a width of 25 feet each. The sidewalks on this block are several feet above the roadway, and the proposed parking in a sloping terrace to the roadway on either side appears to be an ideal solution to the problem offered in low street and high sidewalks. The work is done out of the regular streets appropriation.

SEWERAGE AND SANITATION

City Is Placarded On Infantile Paralysis.

Niagara Falls, Canada.—Medical Health Officer Dr. Wilson has had the city and township placarded with warnings against infantile paralysis. The public is cautioned about coming in contact with the disease and is told to have a physician immediately upon the development of symptoms of the disease. No new cases are known to have developed here, and there have been no further deaths from the disease.

Oil Streets to Prevent Paralysis.

Claremont, Cal.—A meeting of citizens has been held to consider steps to be taken by the town to prevent any invasion of infantile paralysis, of which there have been a few cases in surrounding towns, and a large number in Los Angeles, where the most rigid quarantine of all cases is being observed. While Claremont has as yet had no case of the disease and is considered an unusually healthful place owing to the splendid location and good drainage, yet it was felt that a community which so carefully guards its orange trees from disease which might be brought in would not wish to fail in surrounding its little children with the same safeguards. It was voted that the health officers order a thorough cleanup of the city, that the people be urged to "swat the everlasting fly," and make every effort to keep the town clean; that parents be advised to discourage children's parties or the gathering of children in any place. It was also voted that the streets of Claremont be oiled, as that would hold the dust down for some months to come.

Twenty-Five Cases Typhoid Traced to Milk.

Phoenixville, Pa.—Scattered among the little settlements in the Chester Valley and in the towns of Paoli and Malvern are about 25 cases of typhoid fever, and the source of the epidemic is said by the health authorities to have been milk from one dairy farm. This milk peddled among the residents of these communities has left a trail of typhoid fever victims from Williams' Corner, a suburb of Phoenixville, to Paoli along the Pennsylvania Railroad main line. Nearly half the patients are foreigners living at Devault, Cedar Hollow and Howellville. In the household of the milk dealer to whose dairy is attributed the spread of the contagion are three typhoid victims. This man, Paul Mace, living on a farm near Williams' Corners, was the owner of a milk route along which he sold about 80 quarts of milk daily. Dr. Joseph P. Scattergood, of West Chester, who has been fighting the spread of the disease, says all the victims of the disease so far reported to him were, without exception, consumers of Mace's milk. Investigators visited the Mace farm and found victims of the epidemic there. Samples of milk were taken and analyzed, but the results were negative. It was learned, however, that until a couple of weeks ago three Philadelphians had boarded at the Mace place and these boarders of Mace are now suspected of having been typhoid convalescents. Under the directions of Dr. Scattergood, who is the county health physician, the cows of the Mace farm were removed to other quarters and the barn, house and milk house thoroughly cleaned and disinfected and the place practically quarantined. The Springfield Water Company, from whose big pumping station near Phoenixville water from the Pickering Creek supplies the towns along the Main Line east of Glenloch to Philadelphia, and as far as Chestnut Hill, early began to take precautions to guard its supply from contamination, and men are camped along the tributaries of the Pickering Creek injecting a germicide into the small streams continuously. Some of these stations are far back in the valley hills, and all day and all night a man is seeing to it that the little stream of the germicide flows steadily into the waters of the stream in the proportion of about one part to half a million of water. Only one of these streams comes from the infected community and that is a stream that flows northward from its source on the Mace farm. The streams near the homes of all the other patients flow southward into the Chester Valley.

Plan Experimental Sewage Disposal Plant.

Indianapolis, Ind.—Plans for an experimental sewage disposal plant, for which the City Council has appropriated \$10,000, are to be rushed to completion by Henry W. Klausmann, city engineer. Klausmann hopes to have the greater part of the plant completed before cold weather, and it will be in operation during the winter months, when the test on a sewage disposal plant is the most severe. In building an experimental plant, Klausmann expects to plan it so that when a permanent plant is provided, the experimental plant can be utilized as one of the units of the permanent plant. The experimental plant is to be some place along the White river interceptor, which empties into White river in the vicinity of Iowa street. The permanent plant will be on the Sellers farm, which a survey by the engineering department has shown to be ideal for such purposes. In the experimental plant, the sewage will be pumped into a "dosing" tank for preliminary settling, and will pass from this gradually by gravitation into an Imhoff tank, where the sewage will be settled further. Two methods of experiments will be tried in disposing of the effluent from the Imhoff tank. Through one method the sewage will flow by gravitation to nozzles, which will spray it over a filter bed of crushed stone and the sewage, now purified, will flow back into the river. The experimental filter will cover one acre of ground, which is sufficient to care for two million gallons of sewage in each twenty-four hours. The other method of experimenting with the effluent will be by treating it by the electrolytic method. Klausmann found this plan used satisfactorily at Santa Monica, Cal. The experimental plant will have a capacity of from one million to two million gallons every twenty-four hours. It is thought that plans for a complete sewage disposal plant will be worked out during the present administration. However, the construction of a plant sufficient to care for the whole city will entail extensive and costly changes in the sewerage system, it is thought. It may be necessary to connect all of the interceptors with a main interceptor large enough to carry the sewage to the disposal plant.

Fish Help War On Mosquito Pest.

Elizabeth, N. J.—In the fight being waged to rid this county of mosquitoes the services of fish are to be employed. The Mosquito Extermination Commission now has a force of sixty men doing actual field work freeing the territory of all pools, ponds and mud holes where it is possible to do so by drainage or filling. Where this is impossible the ponds will be stocked with fish. Co-operating with the State Fish and Game Commission, the Union County Mosquito Extermination Commission is to have the larger ponds stocked with "Gambusia," or what is better known as top minnows. Laborers are now at work clearing the ponds designated of all grass, weeds, leaves and water plants in readiness for the fish. The ponds designated are those known as Pierson's, Turkey Lake, Town Lake and the Germantown swamp, all in and around Westfield. The fish gets its better known name of top minnows through its characteristic of always swimming near the surface. It thrives in either fresh or salt water in the southern climates, and those to be let loose in the Union County ponds will come from North Carolina. By reason of always being near the surface the fish feed largely on whatever floats on the water. It is known that they relish the tiny "boats" in which the mosquitoes lay their eggs, and the destruction of one boat means the annihilation of from 250 to 400 larvae which in five days' time would be full grown pests. The life of the minnow is uncertain, but it reaches its full growth of about two inches in a season. The men employed by the commission are divided into crews and include thirty laborers, six oil men, and the others are inspectors. The latter go all over the county making notes of the conditions found, and report same to the main office. Where a place is discovered that needs draining or filling, a squad of laborers is piloted to the place by the inspector, who supervises the work. It is expected that none of this work will be necessary next year, as all that is being done is intended to permanently obviate the collection and retention of water.

WATER SUPPLY**Bacteriological Report on Water Excellent.**

Portsmouth, Va.—City Bacteriologist Joseph Grice has made a careful examination of the city water supply and submitted the following report to the city health board: The analysis of the water, stated in parts per million, is as follows: Free ammonia, .052; albuminoid ammonia, .264; nitrates, .01; nitrites, none; chlorine, 2.8; oxygen consumed, 9.6; hardness, 1.4; bacterial tests for the colon group are negative. The above report is the result of a test authorized by the health board at a recent meeting.

New Pumping Engine Insures Adequate Water Supply.

Hammond, Ind.—The new fifteen million gallon Snow pumping engine has been operating for about thirty days and the city will probably give its formal acceptance within a few days. This engine has been badly needed for a long time and insures the city against any shortage of water which would have occurred if any accident had happened to the old equipment. The old pumps will be kept in reserve for emergency service.

City Supplies Artesian Water in Schools.

Woodbury, N. J.—When the schools reopen on September 3, the pupils will not be allowed to drink city water, and the bubblers that have been installed will be discarded, for a time at least. Arrangements have been made with a local ice company to have artesian water delivered in large bottles at the schools daily, and individual cups are to be used. This step is due to the typhoid scare.

Break in Valve Cuts Off Supply.

Richmond, Va.—The breaking of a valve in a large feed main under Main street, at the corner of Jefferson, caused a water famine over a large portion of Richmond recently. In making the repairs, it was necessary to close the pipe at Beech and Main streets, thus cutting off water along Main street, and on Grace and Franklin streets east of the high pressure service, and largely reducing the pressure all over Church Hill. The car tracks are being replaced along Main street at Jefferson, and after all except owl cars stopped at night a Water Department gang undertook to replace the valve in the old 24-inch feed pipe, which runs down Main street from the New Reservoir. The pressure was too great; the valve had rusted out, and the street was flooded with an avalanche of water which continued until the main was shut off. Even then cross connections turned water back into the main from below and another cut off was made at Second and Main. Superintendent Eugene E. Davis asked the aid of the Fire Department, and an engine was put to work pumping out the trench so that workmen could repair the damage.

Second Leak in New Britain Dam.

New Britain, Conn.—An error in judgment will cost the city water department between \$20,000 and \$25,000 to correct. The trouble is at Whigville. Another leak has developed. This one is in the south side of the dam. The committee of the Common Council which was appointed to investigate the water department has conferred with the water board and an estimate of the cost of various work has been given to the committee. Members of the committee pried into the cause of the leaks and the explanation offered was that the trouble was not due to poor engineering, but to an error in judgment. The leaks are said to have been caused through the failure to construct the core wall deep enough on the north and south wings. The recent break in the dam at the high pressure reservoir did \$2,000 damage and the repairs may possibly cost \$5,000. The commissioners believe that concrete work may be necessary near the gate house, where the break occurred. At present the department is engaged in the construction of mains in Belvidere, the locating of stand pipes for street sprinkling, and laying mains in Allen and Howard streets.

Blow Water Main Up With Dynamite.

Kansas City, Kas.—Dynamite was used early one morning last week to blow up two sections of the 24-inch water main that supplies Kansas City, Kas. It took three days to repair the main. Meantime the town had to depend on a small five-inch pipe for its water. The same main was destroyed by dynamite July 19 last. Two men were seen running from the scene of the explosion shortly before it took place. No reason for the dynamiting can be assigned by the police.

Catawba Will Give Water to Charlotte.

Charlotte, N. C.—The 11-mile pipe line to the Catawba river which will in future supply the city of Charlotte with water has been completed. The project now successfully concluded was suggested by the remarkable conditions which prevailed last summer, when in a period of protracted drouth, Charlotte suffered a water famine and was compelled to bring water by train from cities miles away.

New Gravity Water System Being Built.

Johnson City, Tenn.—The work of construction on the new gravity water system for Johnson City is being pressed forward by the contractors. Oliver & Hill, of Maryville, are digging the reservoir, and their contract is half-way along. The reservoir is located on Tucker's ridge, south of the city, and the capacity is 7,000,000 gallons. Pipe laying began at the Big Blue Springs, 13 miles south of the city, two weeks ago, and about a mile and a half has been completed. The pipe is 16 inches in diameter, and at the springs concrete intakes have been constructed. About two years ago the city purchased the Watauga water system at a cost of \$150,000. The new pipe line will be connected with the distributing system of the Watauga system. The new pipe line is to be completed by Jan. 1, 1913, and the entire system is to cost \$375,000. The Big Blue springs have a daily flow of 7,000,000 gallons, and they are located in the Unaka mountains. A number of lawsuits are pending over rights of way and the bringing of the water from Unicoi County into Washington County. The city bought the Big Blue springs more than three years ago, and the leading lawyers of Johnson City claim that the water can be brought away from the county.

Bangor's Water Works System Improved.

Bangor, Me.—With the present equipment of the Bangor water works, which was recently improved at a cost of about \$60,000 by the installation of a new filter plant, one of the most modern and complete mechanical filters on the market, the city of Bangor may draw 6,000,000 gallons of filtered water from the plant each 24 hours, water that authorities have tested exhaustively and have pronounced safe for all domestic purposes. The long dam which turns the water into the wheels commands a large water power, one that might easily be developed to a great deal more than its present capacity. There are seven turbine water wheels, which with a 12-ft. head of water have a capacity to develop 300 horsepower each, a great deal more power than is necessary for the operation of the plant. It is estimated that the Bangor plant is worth about \$1,500,000.

New Waterworks Nearly Finished.

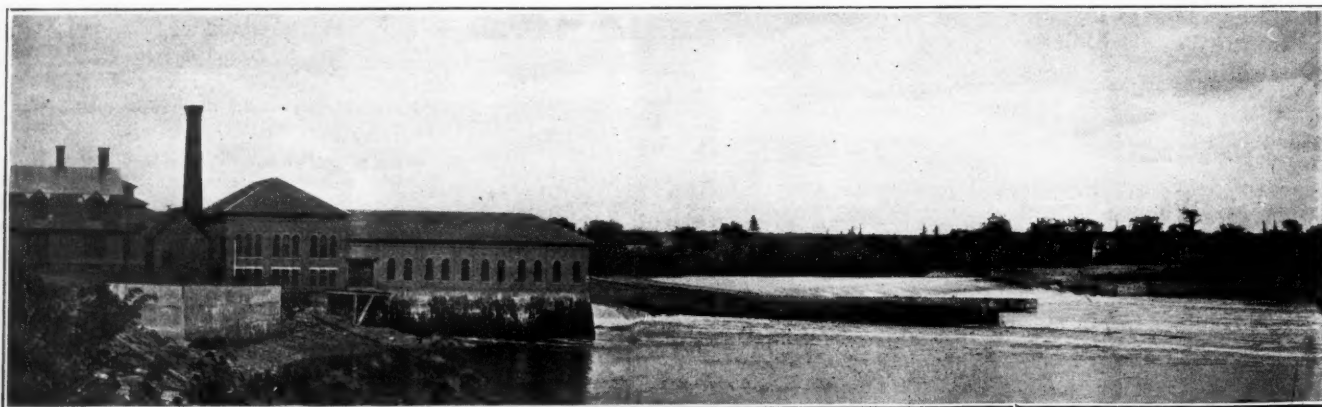
Corpus Christi, Tex.—Waterworks Commissioner Uehlinger states that the concrete water reservoir that the city is building on the property known as the stand pipe lot is about completed. The concrete foundation for the new pump will be completed within the next few days. The tank has a capacity of 140,000 gallons of water, and when placed in use will enable the city to have a water storage capacity in the city of 290,000 gallons. With this amount the city will have ample water for full fire protection, for several months at least.

Report Water Safe for Drinking.

Torrington, Conn.—Health Officer Dr. George Streit has received from the State chemist, Prof. James A. Newlands, of Middletown, a report on the analysis of a sample of water taken Aug. 6 at the Coe Brass Mill from the city water supply. The chemist says: "The results were very satisfactory at this time, the number of bacteria being low and colon bacilli were absent in ten cubic centimeter volumes of the water." Reports on five samples of water taken from Crystal Lake, 35 Washington avenue, 361 South Main street, 466 Main street and 69 Water street, were also received, the chemist remarking: "The samples show considerable variation of bacterial content, but the colon bacillus was not found in any of the tests in ten cubic centimeter volumes of water. The water appears to be safe for drinking purposes at this time."

Talladega Develops a Fine Well.

Talladega, Ala.—For years past the city of Talladega has been hampered in its growth by a persistent belief on the part of some of its citizens and visitors that the water furnished by the city would cause bowel troubles and sickness. The hydrant water is procured from an immense spring situated in the very heart of the town, and many persons were of the opinion that the sewage from the city found its way into the water. Moved by this state of affairs, a few public spirited citizens made up money among themselves to dig a well, hoping to find pure artesian water. For over a year efforts have been continued in the direction of boring for artesian water. Last week a depth of nearly 500 feet was reached, and a pure, clear, cold stream of water gushed to the surface. A 30-hour test of the well showed the flow to be 240 gallons per minute, which is twice the quantity now used by the city water company. The following extract from a letter of P. B. Moss, State bacteriologist at Montgomery, dated August 18, 1912, speaks for itself: "The result of the examination of the water sent shows it to be nearly sterile; there were no gas forming bacteria even in 10 cubic centimeters, so that excludes colon bacilli. Three plates were made for estimating total number of bacteria; one was sterile and one contained 12; these plates contained fractions of cubic centimeters, so the average of the three, when reduced to cubic centimeters, would be only about 40 bacteria percentage—which is as good water as we ever see." The well is but a few feet from the pumping station of the city, and water can be put into the mains of the city with comparatively little expense.



Courtesy Bangor Daily Commercial.

BANGOR'S PUMPING STATION, HEAD HOUSE AND SEDIMENTATION BASIN.

STREET LIGHTING AND POWER

Mayor Favors Electricity.

Boston, Mass.—Commissioner Rourke, on orders from the mayor, is investigating the cost and feasibility of installing electric lights in the side streets, alleys and parks, to take the place of the gas system of lighting. According to the mayor it has been roughly determined that electricity would mean a saving of at least \$60,000 a year over the figures presented by the commissioner for the maintenance of the Graetzin lamps, and, furthermore, would not mean the expenditure of any money for installation. The mayor does not say that he favors the substitution of electricity, but he believes that it would be most advantageous for the city to enjoy so general a buying of wires that a contract of this kind would mean. He says one argument that would be heard against electricity is that of giving the street lighting of the city to one concern where there would be no competition.

Will Place Charlotte Wires Underground.

Charlotte, N. C.—City Electrician Connelly has begun a campaign to have all wires in the fire limits go underground. He will start by taking down the string of lights put up several years ago for decorative-illumination purposes and will then turn his attention to the Western Union and Postal wires. The Bell Telephone Company officials have signified a willingness to co-operate with the city in clearing the streets of these hindrances to fire fighters, and it is believed that within the next few months Charlotte's streets will present a different appearance.

South Haven Installs Lighting Outfit.

South Haven, Mich.—The best lighted city of its size in Michigan is what South Haven claims to be. The installation of the ornamental lights has made such a vast difference in the lighting that flattering comments are heard on every side. There are 140 posts in the system, fitted with beautiful cluster lights, and the entire consumption of electricity is figured at 15½ kilowatts per hour, which, figured at a manufacturing cost of 4½ cents, equals 70 cents per hour to make this little resort city one "great white way" at night. The cost of installing the system was \$4,800.

Municipal Lighting Proposed.

Hammond, Ind.—The discussion of the lighting problem of this city has been referred to the street and alley committee, of which John King is chairman, to make a report covering the several phases of the matter. Ever since the old contract expired, several months ago, there has been a considerable difference of opinion. The company which had the contract is desirous of renewing it, another company wants the business, and the suggestion has also been made that the city operate its own lighting plant, using the old pumping plant as a power house.

Insufficient Appropriation for Lighting.

Waterloo, Ia.—It costs the sum of \$25,000 per year to light the city of Waterloo. This year there will be a deficiency of \$2,000, which overdraft will have to be taken from the general fund in order to pay the expense of illuminating the streets of the city. It takes the light taxes of four city blocks of residence property to pay for the annual cost of one arc light, and under the present taxation the owners of business property are partially paying for the expense of lighting the residence districts. These facts were revealed by Mayor R. C. Thompson at the adjourned session of the city council. They came in the form of a warning to the council members to go slow on ordering new lights as the fund will result in a deficiency this year. For the remainder of 1912 the council will order lights only where they are absolutely necessary. Several arcs which have been located at close range have been weeded out in order to cut down the expense.

Will Close Down Power Plant.

Gainesville, Fla.—Considerable agitation is being manifested over the fact that, according to a telegram received from Haverhill, Mass., from Charles W. Morse, owner of the Gainesville Gas and Electric Power Company, the city will be in darkness from September 1, for an indefinite period. Considerable comment pro and con has been provoked by this condition of affairs. Three years ago the city by a substantial majority voted upon a bonding ordinance for the purpose of paving, extension of water works system, and the acquiring of a municipal lighting plant. The proportion for the latter was \$35,000. The question seemed to lay dormant until recently, when the board of public works, under the direction of whom the funds will be dispersed, made an offer to Mr. Morse for his interests, which was refused, leaving the matter of the erection of a plant up to the board. Some time ago the city council passed an ordinance regulating the rates to be charged for electric current and gas. The local company entered strenuous objection to the sweeping reduction, declaring that the company could not operate without loss under provisions. However, the council "stood pat," whereupon the validity of the ordinance was tested before Judge James T. Wills, Eight circuit, that official ruling that the city council had the authority to pass such a law, and regarding validity, the ordinance was perfect. An appeal was made to the supreme court, and that tribunal sustained the decision of Judge Wills, which ended the matter as far as the ordinance and the law was concerned. Mr. Morse evidently still contends that the plant cannot be operated at a profit, judging by the order to close down on August 31, indefinitely.

City Will Save Large Sum on Lighting.

Charleston, S. C.—The decision of Justice Woods, refusing the injunction sought by the Consolidated company and sustaining the right of the city of Charleston to reduce the rates for lighting, means a saving to the city government on its arc lamp account alone of \$259.39 a month, or \$21 per lamp per year, not to speak of the cost of lighting the City Hall and the various city institutions. There are 283 arc electric lamps which have been contracted for at a cost of \$65 per lamp per month, which meant a monthly expenditure of \$18,395, against a charge of \$15,282 at the new rate of \$54 a month. The city has no contract with the Consolidated company for the gas lighting of the streets and has not had for some years, since the company refused to bid on furnishing the equipment and maintenance of the lamps with the prescribed style of burner, shade, etc. The gas company found it more to its advantage simply to sell the gas to the companies which have been getting the contract, so that the reduction of the cost of gas from \$1.20 to \$1, which became effective with the eight-cent current rate with sliding scale for the consumers, will have no bearing on the gas light account of the municipality. The savings of the individual consumers will be appreciable, but the figure is yet to be definitely arrived at. The Consolidated company figured out some weeks ago that the reduction in rates meant a loss of revenue to the corporation of about \$80,000, although Alderman Pinckney, the author of the bills, was never able to confirm this figure. If this sum is correct, then consumers are the gainers to this extent.

Decreasing Number of Poles by Joint Agreement.

Los Angeles, Cal.—Thirty thousand poles have been eliminated from Los Angeles streets as the result of the joint-pole agreement entered into by nine public utility concerns about five years ago. Combinations have been recorded on over 21,000 poles. These companies maintain a joint-pole committee comprising one representative from each concern; there is a permanent salaried secretary. The highest and most satisfactory poles in a given location are selected for joint use where combination is desired. The owners bill the other users for a proportion of the interest on the value of the poles. Where there are no proper poles erected, one of the companies erects such ones and sells a proportionate interest to the other users who transfer their wires and remove their old poles. Where

an old line is adequate for the owner's prospective service then a company, desiring to run wires through that section, erects the new poles and the old company transfers its wires and cross arms. The latter concern is given an interest in the new line without cost and its old poles remain its property. Condemned joint poles are removed at joint expense and sold at auction; the proceeds are divided pro rata.

Lighted Highway Section Complete.

Venice, Calif.—The first section of the Venice-to-Los Angeles lighted highway has been completed. Ornamental concrete lamp posts now line either side of St. Mark's boulevard and Center street leading directly to the location of the new Maier pier, piles for which are now being driven. The poles are of municipal make and are sold to the property owners at nominal cost. Of reinforced concrete, they are built to stand without limit. When plans are completed for the lighting of Washington boulevard all the way to Los Angeles, Venice probably will put in a bid to the county to supply municipal posts and thus make the system from Los Angeles to the sea a uniform one. City Trustee Howard Lorenz is the designer of these light standards. The first property owner to install them was Frank Wiggins, secretary of the Los Angeles chamber of commerce, who has a row adorning a retaining wall about his home at Thornton avenue and Trolleyway.

White Way for Palestine.

Palestine, Tex.—The City Board of Commissioners has placed the order for a pretty design of lamp post to be used for the white way lighting system that will be installed here soon, and the posts will be shipped right away. The system of lighting will be rushed to completion, and an effort made to have the white way installed before the fall fair will be held in September.

Light Tower for Gainesville.

Gainesville, Tex.—A tungsten lamp of 500 watt capacity and the largest incandescent globe ever brought to Gainesville will be placed on the big tower at the waterworks plant within a few days. Electricians have just finished putting up the wires and fixtures, and owing to the height of the tower it will be possible to see the light for ten miles.

FIRE AND POLICE

Establish Stations for Motorcycle Police.

Los Angeles, Cal.—Four stations for motorcycle police will be established by Chief Sebastian, who has asked \$1,500 to purchase motorcycles. One station will be in the Wilshire District, another Southwest, a third in Boyle Heights, and another in Garvanza. This is carrying out the chief's plan for rapid police service in small districts.

Keyless Boxes for Fire Alarms.

Portsmouth, Va.—Work has been started converting all of the fire alarm stations in the city into keyless boxes. Glass fronts have been put in the stations in the First, Second and Third wards and are being installed at present in the Fourth ward. The substitution of glass fronts for keys in all fire alarm stations is in conformity with councilmanic action of a few weeks ago, when it was decided to make the change.

First Fire Well is to be Filled.

Fort Worth, Tex.—Fort Worth's first "fire well" is being filled up. The well is located on Main street, between First and Second streets, and is in the middle of the street. Workmen have begun to fill the well with stones. About 150 wagon loads will be required to fill it. The well, which was provided for fire protection, was dug during the administration of Fort Worth's first Mayor, Dr. Burks, in 1874. Soon after it was dug a volunteer fire department

was organized. A bucket brigade was formed and a few months later the "Panther," a pump engine, was secured, and the water was pumped from the well with this. In 1886 the water works was put in service and since that time the old well has not been in use. The well was forty feet deep and thirty feet in diameter. Although during a number of bad fires water was pumped all day and all night, the well was never known to be dry. When the water works was put in operation a large stone was placed over the top of the well, and when the paving was put down it was laid over this stone.

Corpus Christi Adds to Its Equipment.

Corpus Christi, Tex.—The chemical fire engine which the city purchased several months ago from the La France Fire Apparatus Company, of Elmira, N. Y., has arrived in the city. The city at the same time purchased a steel hook and ladder truck and that will be in Corpus Christi within the next few weeks. With these additions to the local department, the city will be fairly well equipped for fighting fire. One team of horses has been purchased and another team will be bought when the new quarters are ready for occupancy.

Syracuse Gets Combination Hose Wagon.

Syracuse, N. Y.—The new combination hose wagon of the Syracuse Fire Department, which is to be placed at the new Elmwood Fire House, was built by the A. F. & S. C. Stewart Company, of 116 Front street, Rochester, N. Y. The 35-gallon chemical tank and the Utica hand fire extinguishers were furnished by the O. J. Childs Company, of 50 Liberty street, Utica, N. Y., makers of high-grade fire extinguishers. Chemical engines suitable for all purposes, in a variety of styles for city and suburban use, as well as hand extinguishers for the home and factory, are features of the O. J. Childs line.

Durham Tests New Fire Engine.

Durham, N. C.—The new fire engine has received its third and final test, and it satisfactorily met all the requirements of the Southeastern Tariff Association. It kept up a constant head of steam, threw a single stream of water more than 40 feet, and discharged 778 gallons of water through three lines of hose three hundred feet in length each, per minute. Five pounds of steam was secured from cold water in four minutes, and one hundred pounds in nine and one-half minutes. The records of the tests were forwarded to the headquarters of the Tariff Association, and in a few days first class ratings will be made for Durham.

New York's Fire Rules Revised.

New York, N. Y.—The first revision of the rules of the New York Fire Department has been made since 1905 and a neat little manual has been issued to govern the department. There is surprisingly little mention of automobile fire apparatus, considering that such a large fraction of the fire-fighting machines installed in New York is composed of motor-driven vehicles.

Among the rules specifically directed at the automobile apparatus are the following: In section 34 it is ordered that the company commander shall ride alongside the chauffeur. Section 75 provides for special reports as to the effect of inferior gasoline upon motors. Section 112 forbids any member of the department to ride in an automobile not the property of the department and requires all members to prevent any person not a member of the department from riding on a department automobile. Several of the rules provide for maintaining and caring for motor apparatus, but there is nothing different in their language than in that applied to the horse-drawn engines. The department is organized under the new rules as a military body with Commissioner Joseph Johnson as honorary colonel and Chief Kenlon as colonel commanding.

AUTO APPARATUS NOTES

Denver, Col.—Denver's new motor truck, the latest acquisition to Denver fire department, was given a trial run one day last week, and attained a speed of 35 miles an hour. The truck cost \$4,925. It will be installed in the Park Hill Fire Station, recently built on the lines of a bungalow, and claimed to be the most beautiful fire station in the United States.

Albany, Ga.—Albany's new auto fire truck, ordered last spring, has been shipped. The new truck cost the city \$5,500, and is of the very latest pattern. It was built for the city by the American La France Fire Engine Company, and is fully equipped for the needs of the local fire department. It is a combination hose, ladder and chemical truck, and is expected to prove a very effective piece of fire-fighting apparatus.

Boston, Mass.—Charles H. Cole, Fire Commissioner, at the request of the city council, investigated the Orient Heights district to discover if additional fire apparatus was required in that section. In a letter to Mayor Fitzgerald he stated: "I find that the farthest building is about one and one-tenth miles from the nearest engine house. This engine-house is equipped with a horse-drawn steam fire engine, a horse-drawn ladder truck and a motor propelled combination chemical and hose wagon. In my opinion there is not, at present, sufficient building valuation to warrant the erection of a fire station in the Orient Heights district. In order, however, to bring better fire protection to that section I respectfully recommend that the \$15,000 now appropriated for a fire station site at Orient Heights be transferred to the account for the purchase of motor apparatus, and that a motor propelled pumping engine and a motor propelled ladder truck be installed in the house of Engine 11 in place of the horse-drawn apparatus there now. This would bring the Orient Heights section within two minutes of three pieces of fire apparatus, namely, a chemical, a pumping engine and a ladder truck, all motor driven, and give as much protection to this part of the city as is enjoyed by any other part of East Boston."

Rockaway, N. J.—The Fire Department has received from a local mechanic its rebuilt combination chemical, hook and ladder and hose apparatus. The chassis is that of a Royal Tourist pleasure car, with the frame reinforced with channel iron put over the old frame. It has a speed of 30 miles per hour. The wheel base is 140 in. The rear axle was used for a jack shaft and a heavier one made for the truck. It carries two 30-gal. tanks, 150 ft. of acid hose, two 3-gal. hand extinguishers, one 40-ft. and one 24-ft. ladder, roof scaling ladder and all other appliances. It also carries eight men. This wagon was built by Fred Fichter in his garage at Rockaway, N. J.

Elizabeth, N. J.—The city's first piece of automobile fire-fighting apparatus went in service one morning last week, when Engine No. 7, the new triple automobile engine, was ordered on duty with its complement of six men by Chief Gerstung. The big car, which is of the American La France manufacture. Captain Louis A. Bickel will be in command. The new machine will change entirely the list of calls of the uptown fire companies. While these will respond to all alarms as heretofore until the men get broken in to the new machine, they will be switched off eventually by the new schedule which has been prepared by Chief Gerstung. This schedule also provides for the runs of the new automobile truck which will be shipped to Elizabeth the latter part of the month. This is now being constructed at the works of the American La France Company at Elmira, N. Y., and will go in service at the new headquarters at Port and High streets.

Dallas, Tex.—An exhibition performance was given by the American La France Fire Engine Company at the corner of Wood and Martin streets by a large auto fire engine sold to Houston and shown in Dallas through the courtesy of Mayor Rice of Houston. The auto fire engine has six cylinders, 105 horse-power, with a wheel base of 156 inches. It is designed to carry 1,500 feet of 2½-inch hose. The pump has a capacity of 700 gallons per minute. The exhibition was given before a crowd composed largely of local and visiting firemen and officials of neighboring cities. The machine, in one of the tests, threw three streams of water to the height of a six-story building. Using a 2-inch tip, water was thrown seventy feet in the air at the rate of more than 800 gallons per minute. Those who came to Dallas expressly to see the auto fire engine in operation were: From Fort Worth, Fire Commissioner Allen, W. E. Bideker and other officials; Waco, A. M. Prescott, fire chief of Waco for twenty-seven years; Fire Commissioner John Wright, Jim Meers and Joe Monteleone; Sherman, Fire Commissioner Frank Thrasher, Chief E. Arnold and Mayor John Wall; Denison, Fire Commissioner E. E. Davis and Fire Chief John Cooper; Waxahachie, W. O. Shakelford; San Angelo, Chief Jim Freeland; Terrell, Mayor H. Gailbraith and Joe La Roc; Marshall, Mayor T. S. Cavin and S. A. Griffin.

Ware, Mass.—The committee recently appointed to buy a motor fire truck, after having considered the matter in every way, has decided upon a machine made by the Webb Manufacturing Company, of St. Louis, Mo. The company has agreed to send a machine and man to Ware, to remain there until delivery of the new machine is made. This is promised in sixty days. After it is installed Ware will have, it is hoped, disposed of the question of fire protection for some time to come.



ROCKAWAY'S REBUILT COMBINATION CHEMICAL AND HOSE WAGON.

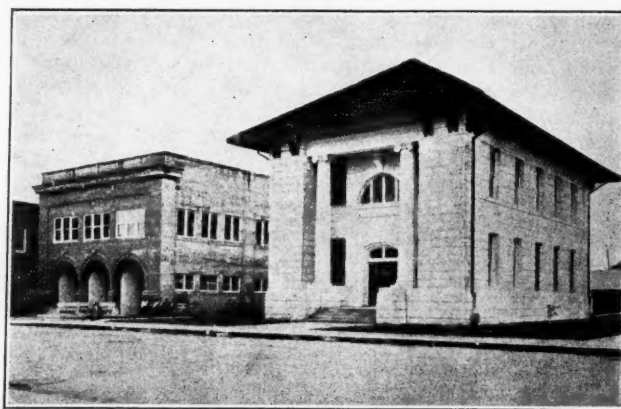
Vernon, Tex.—The 70 horse-power automobile fire engine recently ordered has arrived. It is a combination chemical and hose cart, carrying 1,000 feet of hose and two 40-gallon chemical tanks. It cost \$5,500. It will play a conspicuous part in the program of entertainment for the Panhandle Firemen's Association, which is to meet in Vernon.

Butler, Pa.—Word has been received by Dr. R. A. Thompson, Chairman of the Fire Committee of Council, that the auto truck manufactured for Butler at the factory of the Knox Company had been shipped from the factory at Springfield, Mass. The new machine will be stationed at the South Side quarters, and it is expected that "Abe" Zorb, now assistant driver at Central station, will be transferred to the South Side to run the new machine. Zorb is an experienced driver, and will handle the big fire-fighting apparatus in good shape. The new machine will be appreciated most heartily by the residents of the hilly sections of the South Side, as it will be capable of reaching any part of the South Side within at least two minutes from the time an alarm is sent in, and will prove of value in getting to fires in the higher sections of that part of town. Butler also has a large Pope-Hartford fire-auto at the Central station.

New Rochelle, N. Y.—A new auto engine, the property of Neptune Fire Company, of New Rochelle, and driven by Foreman James Howard, took part in the Newburg parade last week, and won first prize of \$75. The machine has a horse-power of 45. Its chemical tank has a capacity of 40 gallons, and the machine carries 250 feet of chemical hose, two five-gallon chemical extinguishers, acid tanks, soda tanks, roof and scaling ladders, door openers, pick-axes, fire axes, crowbars, plaster hooks, and can carry 1,200 feet of 2½-inch cotton, rubber-lined hose. The lighting system on the car is perfect. In front there are two 10-inch lights and one 10-inch on the dash. These are gas lights ignited by electric switch at the driver's foot position. The side and tail lights are combination oil and electric, ignited by switches. The body of the machine is one piece of aluminum one-quarter of an inch thick, and weighs when empty 7,000 pounds. It can make a speed of 47 miles an hour, and has a locomotive bell and hand-operated siren as its alarm system. The cost was \$8,000.

Spokane, Wash.—Commissioner of Public Safety Z. E. Hayden announces that with the permission of the City Council he would carry out plans which will result in seven of Spokane's fire stations being fully equipped with automobile fire apparatus, completely eliminating horses in about half the city's stations. The Commissioner proposes to put motor fire apparatus exclusively in Stations Nos. 5 (headquarters), 11, 10, 14 and 15, located, respectively, at the City Hall, Manito, Gordon and Division, North Hill and Altamont the two latter being the new stations Commissioner Hayden is asking money to build for 1913. This, with Nos. 1 and 4, located, respectively on First avenue, between Stevens and Washington streets, and at First and Adams street, which are already fully auto equipped, will give the city seven out of 15 stations in which horse-drawn apparatus will have been eliminated. "I intend to recommend that the two new stations I have asked for 1913, to be located at Wabash avenue and Jefferson street, and in Altamont, and to be known as No. 14 and No. 15, be equipped with automobile apparatus," said the Commissioner. "If horses are eliminated the buildings for these new stations can be constructed for \$1,000 less each, owing to there being no necessity for barns. The buildings can be built one-story high if there is no barn attachment. The horses at No. 11, in Manito, will be eliminated as soon as the new motor hose wagon arrives. The new wagon will be placed in headquarters, to be used as a tractor to pull the fire engine there, and an automobile hose wagon at present at headquarters will be moved to Manito, cutting out horses at No. 11. I intend to ask for an appropriation to buy a combination automobile hose and chemical for No. 10, at Division street and Gordon avenue, to supplant the horse-drawn equipment."

Miami, Fla.—For some time Chief Chase has been trying to get the City Council to purchase a swift automobile for his use, but the City Council did not see fit to comply with his request, so the firemen have taken the matter up and have purchased a Hudson car. The city a short time ago purchased an automobile chemical engine which is giving the best of satisfaction, but Chief Case is of the opinion that the city should have a machine especially for



Courtesy Florida Times-Union.

CITY BUILDING AND FIRE STATION, MIAMI.

his use which will enable him to get to a fire more quickly. There is some discussion of purchasing an auto outfit for the steamer and the hook and ladder trucks, and it is claimed that it will be much better to have these fire-fighting machines drawn by auto than by horses, and that the auto will be much cheaper. Miami has one of the best and most complete fire departments of any city in the State of its size. There is probably no place in Florida where the actual fire loss is less than in Miami. It is seldom that a building is destroyed by fire. During the winter months the city is crowded with visitors from all portions of the country, and the fire department receives many compliments.

Wakefield, Mass.—Fire chiefs and captains and municipal officials from practically every city and town within 25 miles will be the guests of the local department when the new motor fire truck is given a test on the common. An old reservoir in the common, used for water for fire-fighting one hundred years ago will be brought into service again for the straight draught test. A hydrant pumping test will follow. There is large interest among firemen in Wakefield's new truck, it being the only triple-combination piece of apparatus with a pumping engine in New England. Chief William E. Cade will have charge of the truck. It cost \$5,800, and carries besides the engine a 40-gallon chemical tank, 250 feet of chemical hose, 1,000 feet of hydrant hose, two ladders, small extinguishers and a crew of twelve men. The pumping engine has a capacity of 550 gallons a minute.

Woonsocket, R. I.—Mayor R. P. Daignault, Councilmen F. X. Berard, Carl W. Capron, Louis A. Almon and Alderman Ovila Dulude, of the Fire Committee, and Augustin J. Cote, Chief of the Fire Department, journeyed to Taunton, Mass., to inspect a combination hose and chemical auto wagon in use by the fire department of that city. The trip was made in an automobile furnished by the Pope-Hartford Company. Upon arrival in Taunton they were shown a \$5,500 auto combination wagon, which has been in use in Taunton for the past four months. It was manufactured by the Pope-Hartford people. The chief of the Taunton department informed the local officials that during the four months the auto has been used it has given the best of satisfaction and that the only cost of maintenance was the purchase of gasoline. The combination wagon carries three ladders, 10, 18 and 28 feet in length, as well as 900 feet of hose, extinguishers and 200 feet of hose for the chemical tank. The machine is of 50 horse-power.

GOVERNMENT AND FINANCE

Costs Fourteen Millions to Run City.

Los Angeles, Cal.—Los Angeles and its immense municipal enterprises required \$14,403,013.41 to operate last fiscal year, according to a report filed by John S. Myers, City Auditor. The total receipts from all sources were \$20,997,161.08.

County to Vote on Civil Service Plan.

Paterson, N. J.—The County Clerk, John J. Slater, has been officially notified to place the referendum on the question of civil service for county employees on the ballots next Election Day. The Freeholders held a special meeting and passed a special resolution instructing the clerk to place the referendum on the ballot. The Freeholders were compelled to take this action, as the petition contained the five hundred necessary signers.

Commission Government Costs City More.

Trenton, N. J.—The City Commission of Trenton, the first city in the East to adopt the commission form of government, has now been in office one year. The year has not been encouraging for those who advocated the change from the old system of Common Council and City Boards, elected or appointed through the Democratic or Republican Party, to the present system of non-partisan commission of five men, elected by the people, to run the city government. Instead of a reduction in the tax rate of the city, it has still further increased. The records show that the city has spent \$100,000, or 10 per cent., more than was ever spent under the old political system in one year. Those advocates of the change are taking refuge in the declaration that, despite the increased cost of maintaining the city government the municipality has been run efficiently. Last year under the commission the tax rate was raised ten points, and a raise of from 13 to 15 points will be found necessary this year. Those who would like to make a change in the system find that it cannot be done in less than five years, although the present commissioners may be recalled and new ones elected. Many of those who are complaining declare the fault is in the system and not in the city commissioners. One direct result of the increased taxation is increased house rents, which have gone into effect in every part of the city.

City Will Invest in Tax Sale Certificates.

Salt Lake City, Utah.—A method by which the city may collect interest instead of paying it and at the same time can maintain an "A 1" credit in the handling of delinquent coupon warrants on special improvements was decided upon at a conference between the city treasurer, auditor and members of the commission. The proposition is to invest special department funds that are lying idle in the special improvement tax sale certificates, the city thus buying in the property that has to be sold to pay the special improvement taxes. Interest on these sales then accrues to the fund invested and when the property is redeemed the principal and interest go to increase the fund. It was decided to invest about \$9,000 of the cemetery department funds in tax sale certificates. The proposal to use this method was made to the commission some months ago by the treasurer and has been under advisement since that time. Recently the treasurer was required to sell at auction about \$10,000 worth of property on which special assessments for improvements had become delinquent. There were no bidders and it was bought in by the city at the assessment value.

STREET CLEANING AND REFUSE DISPOSAL

Wilkes-Barre Commission Stops Street Sweeping.

Wilkes-Barre, Pa.—Street Commissioner Boyle is much elated over the scheme of flushing the city streets instead of sweeping them. The city has been experimenting with this method for a week or ten days; it has been done at night and gives entire satisfaction. In all probability when the contract is let next year for the cleaning of the streets they will be washed instead of swept, as is the practice now. The street commissioner in referring to the

cleaning the streets in this manner had the following to say in regard to it before the street cleaning committee of councils at the meeting recently: "From a sanitary point of view it surpasses any other method of cleaning that I know of. There is very little odor during progress of the work and absolutely none after it is finished. The contrast between a flushed street and a swept street is greatly in favor of the former. In sweeping a street, whether by machine or hand, a certain amount of dust naturally arises and again when the sweepings are being loaded into carts a second quantity of dust is scattered and a third quantity is left on the streets along the gutters to be blown into houses and stores by the first wind that arises or is converted into mud by the rain, whereas in the case of flushing the whole of the accumulations, whether of paper, horse droppings or any kind of rubbish is washed from the streets into the sewer, leaving the streets clean, pleasant to look at, sweet and wholesome to the sense of smell. I cannot too highly recommend the flushing system, although I must confess that the system I was compelled to work under consumed too much time and is too expensive. With proper apparatus consisting of hose with two branches or Y, and an appliance to which can be attached a horse for drawing the same, also a number of small trucks mounted on wheels to carry the hose, at least three times the amount of work can be done with less men and a great reduction in expense. I have had all the catch-pits examined and find them fairly free from mud, etc., showing that the rush of water prevented any great amount of sediment settling in the bottom of the pits."

Grade of Street Oil to Be Raised.

Sacramento, Calif.—Street oil furnished the city from now on will have to contain a certain percentage of viscosity, or binding quality, and must be inspected before unloaded from the oil cars to the city's tank, according to the edict of Commissioner of Streets Burke. Heretofore the oil specifications have said nothing about viscosity, it being presumed that oil with 85 per cent. asphaltum would be sufficiently binding. City Analyst Lichthardt has proven that a high percentage of asphaltum does not necessarily give oil viscosity. For instance, he found the rejected oil recently furnished by the Standard Oil Company contained 90 per cent. asphaltum, 5 per cent. above the amount specified, yet was not fit for the oil macadam streets. The specifications will be amended to include viscosity. The recently condemned oil, part of which had been used on Twenty-seventh street, will be used to settle the dust in Oak Park. It was a mixture of a car of good oil containing 23.5 per cent. viscosity and a car of bad oil containing but 15.5 per cent. viscosity. As it takes thirty hours to complete an analysis of a sample of oil and as a demurrage of \$7 a day is charged by the railroad for all cars standing on the tracks more than twenty-four hours, it will cost the city \$7 a car to analyze the oil, but Commissioner Burke and City Engineer Randle believe this will be a saving in the long run. Oil is now to be supplied by the Union Oil Company.

Brooklyn Property Owners All Want Oil.

Brooklyn, N. Y.—The demand for the oiling roads in Brooklyn is practically unanimous on the part of property owners and residents. During this season the Bureau of Highways, H. H. Schmidt, Chief Engineer, expects to apply about 600,000 gallons of oil to the macadam roads and unpaved streets. The demand is such that if the Bureau had three times as much money applicable for the purpose it could hardly satisfy the demand. Next year funds sufficient to purchase 1,000,000 gallons of oil will be asked. During the past year there have been thousands of requests for oil and in only two instances were objections made to its use.

Much care is exercised in applying the oil. For example, on Cropsey avenue, which is a thoroughfare connecting the Shore Drive with Coney Island, the procedure was as follows: A very light oil, which dries in three days after it is applied, Ugite, was used, and then on only half of the roadway at one time. On July 9 the south side was oiled and on July 25 the north side.

Municipal Garbage Collection Agitated.

Duluth, Minn.—The conference committee will very likely be asked to levy $\frac{1}{4}$ of a mill for the inauguration of a system of municipal garbage collection. In a conference between city officials and representatives of the Woman's Council and of the Commercial club Dr. Rastall suggested that an expert be brought to Duluth to study the situation, lay out districts, make suggestions as to the equipment to be purchased and otherwise aid in getting the system started. It was urged that such an expert would save the city more than his fee. The plan is to inaugurate a system with municipal garbage in as many districts as possible with the small appropriation, and to extend it from year to year until all parts of the city are taken in. Uniform wagons suitable for the purpose would be provided, and the advocates of the system believe that the householders would obtain more economical service through a general system maintained by the city funds than by private payment as at present.

Commission Advocates Working City Prisoners.

Norfolk, Va.—The Industrial Commission has declared itself in favor of the policy of working jail prisoners around Norfolk and ordered that a letter be sent to the Council urging that body to make an appropriation large enough to keep prisoners at work cleaning up Norfolk as long as there is any cleaning to be done. It was pointed out that ditch digging, drainage, clearing out brush-ridden land and general cleaning could be done more economically and better results accomplished through the use of jail prisoners than through any other method that has been tried in this city. The ditches that have been dug—nearly a mile of them—besides the clearing up of brush, was said to be well worth the \$1,100 that the city has invested, and it was pointed out that a further use of the prisoners under a more strict management would result in even better returns on the money invested. The commission is determined to urge upon the council a well defined policy of working jail prisoners. It is anxious that scores of men, some of whom are serving long terms, be put to work, believing that such a policy will be of great benefit to Norfolk besides having a tendency to lessen crime.

Sweepers to Report at Location of Work.

San Francisco, Calif.—The new Superintendent of Street Cleaning, Peter J. Owen, expects to get better results without increasing the street sweeping brigade, he having figured out a plan to add 500 hours a day to the working time of the sweepers, while not keeping them on duty any longer than they have been engaged. His scheme consists simply in doing away with the practice of having them report daily for orders. Instead, they will be directed at the close of work each evening to be on hand in the morning at a certain place, and thus the sweeping will be started promptly every day at the beginning of working hours. The gangs, on completing the cleaning on specified blocks, will not have to report for assignment to another job, as Owen will send out their orders to them and keep them going the whole day. As the working day is limited to eight hours, the saving of time which Owen proposes to bring about will be equivalent to adding more than sixty men to the street cleaning force.

Contractor Fails to Remove Garbage.

Logansport, Ind.—This city is having a hard time in having its garbage gathered and hauled away. The contract is held by John Hedde at \$2,600 a year, but he says he cannot do the work at that price. He is not collecting the garbage as his contract specifies, and the result is that Logansport can be smelled by incoming travelers before they get within five miles of the city. The threat that the city will take the contract away from him has no effect on Hedde. He says that no one else will take it, and evidently the city officials are of the same opinion, for they have failed to revoke the contract. Affidavits have been filed in police court against the contractor by two citizens, charging him with maintaining a nuisance at their respective homes by permitting garbage to accumulate.

Oil Sprayer Said to Be Success.

Watertown, Mass.—Bartholomew Maloney, Superintendent of Streets of Watertown, is enthusiastic over the auto oil spraying machine that the officials have rented. He says it will effect a greater saving and that it will cover a greater area in less time than the old style water-cart. The machine is built like an ordinary five-ton truck, and has large and small tanks, two cylinder pumps and a sprayer. The pumps are placed at the rear of the driver's seat and are used both for filling the tank and sending the oil through the pipes for distribution. The tank has a capacity of 1,500 gallons. Two men are required to operate the machine, one to drive and the other to look after the spraying work.

RAPID TRANSIT

New Cars For Haddonfield.

Haddonfield, N. J.—Patrons of the trolley line from Haddonfield to Camden are much elated over the fact that 12 "prepayment" cars are to be put in operation on the Haddonfield line. The new cars will be 46½ feet long and will have a seating capacity of 52. The fare is dropped into a Johnson fare box at the rear or entering end. The cars are of semi-steel construction, the under frame being of that metal. They will be heated by electricity, have a motor on each truck and will hold two more than the "near-side" cars in Philadelphia. The air brakes will be of two kinds, "straight" air and "automatic" air, the former for all ordinary purposes, the latter for emergencies, a touch of the hand bringing the car to an almost instant stop. The cars will have automatic couplers and unit control, making it possible to run them in trains. When coupled, heat brakes and motive power will all be controlled by the front car. The cars were made at the Plank Road shops of the Public Service Corporation, Newark, under the "Pay-within" patent, and cost nearly \$10,000 each.

Three-Cent Fare for Straphangers.

Portland, Ore.—Mayor Rushlight has signed the Maguire ordinance providing 3-cent fare for straphangers and the ordinance reducing the minimum monthly rate on gas and electricity from \$1 to 50 cents. The measures will become effective in thirty days. President Josselyn, of the Portland Railway, Light and Power Company, has already announced that he will fight the measure in the courts. The Maguire ordinance was passed at a session of the City Council amid the acclaim of hundreds of the people who crowded the gallery and floor of the Council chamber. The ordinance provides for the 3-cent fare for passengers who cannot secure a seat on a street car, or for a 2½-cent fare if the passenger purchases a book of tickets.

Engineer Reports on Subway Construction.

New York, N. Y.—The Public Service Commission for the First District has received the report of Robert Ridgway, Acting Chief Engineer, on the progress of subway construction for the month ending August 15, 1912. The report shows that there is now under construction 13½ miles of four-track subway in Manhattan, The Bronx and Brooklyn, under contracts aggregating about \$62,000,000. Five thousand men are engaged every day on the work. This includes about 8 miles of four-track subway on the Lexington avenue line, 4 miles of four-track subway on the Fourth avenue line Brooklyn, and 1½ miles of four-track subway on the Centre street loop in Manhattan. The Fourth avenue subway and the Centre street loop are nearly completed, and when finished will be operated by the Brooklyn Rapid Transit Company. The Fourth avenue subway will connect the Brooklyn Rapid Transit lines to South Brooklyn and Coney Island with Manhattan by the new Manhattan Bridge, and later will have another connection by means of a tunnel under the East River from Montague street, Brooklyn. The Centre street loop which connects with the Williamsburg and Manhattan Bridges will be used to bring in a large portion of the elevated railroad traffic of the Brooklyn Rapid Transit Company from other parts of Brooklyn, and will thus relieve the crush on the old Brooklyn Bridge.

Refuses Interurban Entrance to City.

Kalamazoo, Mich.—Differences between Kalamazoo and Grand Rapids are growing to an acute stage over the proposed building of an interurban line. Kalamazoo has given the interurban admission to Kalamazoo, but Mayor Ellis of Grand Rapids refused even to give the representatives of the company a hearing. Kalamazoo backers of the interurban declare that it is a fear of this city drawing much of the trade that now goes to Grand Rapids that has caused that city to block the building of the line. Already construction has been started, much of the roadbed having been finished between this city and Otsego. The Commonwealth Power Company is backing the proposed road, and Kalamazoo business men may soon hold a meeting to discuss ways of forcing an entrance into Grand Rapids.

Adds 41 Miles to South Carolina Lines.

Charlotte, N. C.—Another link is soon to be forged in the chain of tracks of the interurban between Charlotte and Greenwood, S. C. The link to be opened is the newly constructed one between Belton and Greenwood, 41 miles. The overhead wires have not been strung and other like equipment has not been finished as yet, so the line will operate locomotives until the completion of this work. The line will begin at Belton and continue south. The link in the interurban between Anderson and Belton was completed several years ago and has been in operation by the Anderson Street Railway and allied interests. The line will be equipped with the same system of signalling as is used on the line between Charlotte and Gastonia. The system is the latest word in the electrical world for the control of railroads. A despatcher can be placed in Charlotte and control the entire line from that city to Gastonia. The lines of the company will be 64 miles long when the new link is in operation, that line being 41 miles and the Charlotte-to-Gastonia line being 23 miles in length.

MISCELLANEOUS

Municipal Opera House for San Francisco.

San Francisco, Calif.—The first municipal opera house in the United States is to form part of San Francisco's new civic centre, for which \$8,000,000 worth of bonds were voted last spring. The building, on which work will begin within a year, is to cost \$650,000. The Musical Association, a body of public-spirited citizens, will erect the opera house on municipal land, and it will become the property of the city. All receipts are to be applied exclusively to expenses of maintenance and production.

Municipal Dance Hall Is a Success.

Cleveland, Ohio.—One hundred dollars a day, gleaned from the pockets of young men who like to spin their girls over a waxed floor in waltzes and two-steps, has shown the Cleveland city authorities a way to increase municipal receipts, so the present long dance hall conducted by the city is soon to be one among many. The dances cost but 3 cents each. Mayor Baker exercises a close personal supervision over the conduct of the dance hall, which is in one of the parks. He has put a taboo on giddy dances and also ruled against ragtime. An eye, too, is kept upon the clientele with the purpose of keeping undesirables away.

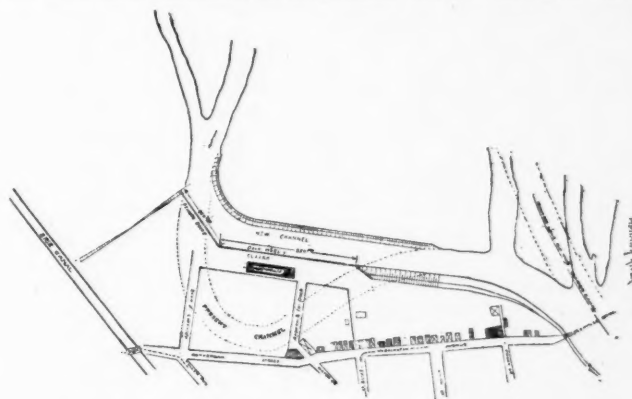
Proposed River Front Improvements.

Pittsburgh, Pa.—Wharfage improvements about to be authorized by the City of Pittsburgh will mark the first decisive step toward the final extension of the river navigation for deep draught vessels in the Ohio, Tennessee and Mississippi Valleys. The expenditure of more than \$1,000,000 in the erection of modern wharves and protecting sea-walls in Pittsburgh, to be completed next year, will assure ultimate appropriations from congress to proceed forthwith toward the realization of all-year river traffic between Pittsburgh and the Gulf. It has developed that the joint waterways committee of Congress will withhold further river appropriations unless the cities on the Ohio and Mississippi and their navigable tributaries erect

modern wharves. It is declared that New Orleans is the only large city affected which has efficient wharfage facilities, and when the question of local river improvements was taken up, the municipality of Pittsburgh decided upon a bond issue to cover the initial cost of the work. The matter will be decided by the voters in the November elections. The Pittsburgh Flood Commission has worked out plans for a sea-wall surrounding the lowlands of the city, and in the same broad scheme of improvement, modern wharves are included for the Monongahela and Allegheny rivers at the junction with the Ohio. The Pittsburgh Industrial Development Commission is working hand-in-hand in promoting progressive enterprise, and prior to the submission of plans, an extensive investigation is being made of the wharves along the great inland waterways of Europe.

Will Improve Barge Canal Terminal.

Schenectady, N. Y.—The Schenectady Barge Canal terminal plan, shown by the map, has been approved in a general way by the State Barge officials. It provides for a public dock with a frontage of 1,080 ft., an enlarged basin that will accommodate several boats and permit their turn-



APPROVED PLAN OF BARGE CANAL TERMINAL.

ing without hindrance, and it will also give the General Electric Company a water frontage of 500 ft., which will be an encouragement for the erection of dockage and a steel rolling plant which has been contemplated for some time. The preliminary work of surveying has been begun by a corps of State engineers, in charge of J. P. Maguire.

Will Establish Municipal Sight-Seeing Autos.

Boston, Mass.—The Park Department has decided to run sight-seeing automobiles in the municipal park system of Boston. These will be the first municipal "rubberneck wagons" in the world.

Spraying Trees Kills Destructive Pests.

Washington, D. C.—Washington's trees are safe for this summer, according to the statement made at the office of the superintendent of trees and parkings. Notwithstanding the fact that the fall webworm, elm leaf beetle and tussock moth have all been abundant this summer, the ravages of the pests have been checked to such an extent as to prevent any material damage to the trees and shrubs of the city. Trees have been sprayed with a solution of arsenate of lead to kill the webworms and elm leaf beetles, and the spraying has been effective, few of the worms having nested this season. Those that have made their webs have been burned out by means of painter's torches. Spraying the trees along Pennsylvania avenue and in other parts of the city, it is stated, has also removed the tussock moth from his favorite field of activity. This insect, in his caterpillar form, is wont to dwell in the plane trees along parts of the Avenue, and from his aerial perch to drop down on the necks of passing women or inside the collars of male pedestrians, in either case creating more commotion than seems to be warranted by his small size and innocent characteristics. The poisoned spray, however, has done away with this.

LEGAL NEWS

A Summary and Notes of Recent Decisions— Rulings of Interest to Municipalities

Interest On Claim.

Mee v. Town of Montclair.—An action for money received held to lie against the town, because it appeared that the said municipality had received the money through its chief of police, who had obtained it on behalf of the town from the plaintiff by duress. The municipality having received the money which had been obtained from the plaintiff, by duress, was chargeable with interest thereon from the time it actually received it.—Supreme Court of New Jersey, 83 A. R., 764.

Brooks v. Sea Isle City.

Under act March 21, 1899, providing that when bonds are issued for a public improvement, a part of the cost of which may be returned by a special assessment, such assessment should be applied pro tanto to the retirement of the bonds so issued, the duty of imposing and collecting the assessment cannot be legally delegated by the referendum to the voters of the city, and so an ordinance providing for the issuance of bonds for the macadamizing of streets is invalid where submitting to popular referendum the amount of the bonds.—Supreme Court of New Jersey, 83 A. R., 781.

Civil Service—Library Employees.

Trustees of Free Public Library of Newark v. Civil Service Commission of New Jersey.—The action of the state civil service commission in classifying under the Civil Service Act the appointees and employees of a free public library organized under "An act to authorize the establishment of free public libraries in the cities of the state" and governed by the revised act, held valid because such appointees and employees are in the paid service of the municipality within which such library is located.—Supreme Court of New Jersey, 83 A. R. 980.

Assessments—Judicial Power.

Knickerbocker Co., v. City of Seattle.—Since the power to determine the necessity for a local improvement, the character of the same, and the materials out of which it shall be constructed, are wholly within the city's discretion when not expressly controlled by statute, the courts are powerless to annul assessments merely because they disagree with the city authorities as to the manner in which the improvement should have been made.—Supreme Court of Washington, 124 P. R., 922.

Assessments—Vacation—Statutes.

City of New York v. Chase, Talbot & Co.—Where an insolvent corporation had property more than sufficient to pay the amount of personal tax, it cannot escape payment under Tax Law, providing that, where the person or corporation against whom a suit is brought to collect a personal tax is unable for want of property to pay the tax, the court may dismiss such suit.—Court of Appeals of New York, 99 N. E. R. 143.

Vaults in Streets—Right of Maintenance.

Title Guarantee & Trust Co. v. City of New York.—Where a complaint to recover money claimed to have been paid to a city under duress alleged that plaintiff, as an owner of real estate, owned a vault under the sidewalk which had been constructed and maintained since 1840, that, desiring to erect a new building, it made application for leave to repair and extend such vault, that the city declined to grant such application except on payment of a certain price per square foot for the space, including the vault as well as the proposed extension, and that, to prevent defendant from arresting its officers should they attempt to remove the sidewalk to repair the vault, plaintiff paid the required fee, it was insufficient to establish duress because not showing that it was necessary to remove the sidewalk for the purpose of repairing the vault, and not showing that there was any restriction on the right of the city to charge any price which it saw fit as a condition to allowing the extension.—Court of Appeals of New York, 99 N. E. R. 160.

Claims Against City—Notice.

McMullen Lumber Co., v. Village of Pine Island.—R. L. 1905, Section requiring notice to a city, village, or borough of a claim for damages for loss or injury by reason of any defect in a street, road, bridge, or other public place, or by reason of the negligence of its officers, agents, or servants, has no application to a claim of liability under Section 4536, R. L. 1905, for loss sustained by one furnishing labor or material to a contractor with a municipal corporation by reason of the failure to take from the contractor the bond required by Section 4535.—Supreme Court of Minnesota, 137 N. W. R. 192.

Public Ways—Irrigation Ditches.

City of Santa Ana et al. v. Santa Ana Valley Irr. Co.—Under Const., empowering any municipality to enforce within its limits local, police, sanitary, and other regulations, a municipal corporation has the right to require the closing of an open irrigating ditch which has, for more than the statutory period, been maintained at the side of a highway, such ditch having become a nuisance through the growth and development of the municipality.—Supreme Court of California, 124 P. R., 847.

Commission Government Act—Construction.

Hirsch v. Burk et al.—The language of the so-called Commission Government Act is broad enough and sufficiently clear to include a department of the City of Trenton created by special act, which acted as a governing body having functions for the administration of the affairs of the municipal waterworks, and this department and the water commissioners were abolished as soon as the commissioners for the government of the City of Trenton organized.—Supreme Court of New Jersey, 83 A. R. 979.

Defective Sidewalk—Notice.

City of Mobile v. Webster.—That the defect in a sidewalk at the intersection of C. and P. streets, where the evidence showed plaintiff was hurt, had been called to the attention of the city, or had existed so long as to charge it with notice or knowledge thereof, necessary, under Code 1907, to make it liable, is not shown by testimony of a defect, at the time of and for some time before the accident, on P. street, "about 150 feet east of C street."—Court of Appeals of Alabama, 50 S. R. 185.

Assessment—Injunction.

City of Birmingham v. Wills.—A bill to enjoin the enforcement of a municipal assessment for a public improvement cannot be maintained as a bill to remove a cloud or to quiet title where it appears that the lien claimed by the city is a valid lien, that the city does not dispute complainant's title or claim any interest in the property except that given by the lien of the assessment, and that it is proceeding to enforce such lien in the manner prescribed by law.—Supreme Court of Alabama, 59 S. R. 173.

Assessments—Estoppel to Attach.

City of Birmingham v. Abernathy.—Where a property owner does not appear on the final hearing on the assessment for a public improvement and contest its validity, she is estopped from attacking its validity for omissions in the preliminary proceedings.—Supreme Court of Alabama, 59 S. R. 180.

Nuisance—Statutes—Ordinances.

City of Shreveport v. Leiderkrantz Society.—An ordinance declaring use of property to be a nuisance does not make it so unless it is in fact so, or is embraced within the common-law or statutory idea of a nuisance. And no authority to remove or abate is derived from the ordinance declaring it a nuisance.—Supreme Court of Louisiana, 58 S. R., 578.

Commission Government Constitutionality.

State ex. rel. Simpson v. City of Mankato et al.—Const. 3, providing that the powers of government shall be divided into executive, legislative and judicial, etc., does not apply to municipal governments; and neither its expressed intent nor its spirit can be read into Const. 36, so as to extend the limitation imposed by the latter on the form of municipal government, and thereby make it co-extensive with the limitation imposed by the former upon the form of State government.—Supreme Court of Minnesota, 136 N. W. R., 264.

NEWS OF THE SOCIETIES

Calendar of Meetings.

- September 2-7.
INTERNATIONAL CONGRESS FOR TESTING MATERIALS.—Sixth Congress, New York City.—H. F. J. Porter, Secretary, 29 West 39th street, New York City.
- September 6-13.
CONGRESS ON APPLIED CHEMISTRY.—Meeting, Washington, D. C.—Bernard C. Hesse, M.D., Secretary, 25 Broad street, New York, N. Y.
- September 16-19.
ILLUMINATING ENGINEERING SOCIETY.—Annual Convention, Niagara Falls, Canada.—P. S. Millar, Secretary, 29 W. 39th street, New York City.
- September 17-20.
INTERNATIONAL ASSOCIATION OF FIRE ENGINEERS.—Annual Convention, Denver, Col.—James McFall, Secretary, Roanoke, Va.
- September 18-19.
NEW ENGLAND WATER WORKS ASSOCIATION.—Thirty-first Annual Convention, Washington, D. C.—Willard Kent, Secretary.—Headquarters, Boston, Mass.
- September 18-20.
AMERICAN PUBLIC HEALTH ASSOCIATION.—Washington, D. C.—Seldcar M. Gunn, Secretary, 289 Fourth avenue, New York, N. Y.
- September 18-20.
LEAGUE OF AMERICAN MUNICIPALITIES.—Sixteenth Annual Convention, Buffalo, N. Y.—John MacVicar, President, Des Moines, Ia.
- September 23-28.
FIFTEENTH CONGRESS ON HYGIENE AND DEMOGRAPHY.—Meeting, Washington, D. C.—Dr. John S. Fulton, Secretary, Army Medical Museum, Washington, D. C.
- September 24-26.
CENTRAL STATES WATER WORKS ASSOCIATION.—Sixteenth Annual Convention, Detroit, Mich.—R. P. Bricker, Secretary, Shelby, O.
- September 24-28.
CHAMBER OF COMMERCE AND INDUSTRIAL AND COMMERCIAL ASSOCIATIONS.—Fifth International Congress, Boston, Mass.
- September 30—October 5.
AMERICAN ASSOCIATION FOR HIGHWAY IMPROVEMENTS.—Annual Convention, Atlantic City, N. J.—J. E. Pennybacker, Jr., Secretary, Colorado Building, Washington, D. C.
- October 2-12.
FIRE EXPOSITION AND INTERNATIONAL CONFERENCE OF FIRE PREVENTION, PROTECTION AND EXTINGUISHMENT.—Madison Square Garden, New York City. A. D. V. Storey, Secretary, 1260 Broadway, New York, N. Y.
- November 12-15.
AMERICAN SOCIETY OF MUNICIPAL IMPROVEMENTS.—Annual Convention, Dallas, Tex.—A. Prescott Folwell, Secretary, 50 Union Square, New York.
- December 3-6.
AMERICAN ROAD BUILDERS' ASSOCIATION.—Ninth Annual Convention, Music Hall, Cincinnati, O.—E. L. Powers, Secretary, 150 Nassau street, New York City.
- December 12-18.
NATIONAL ASSOCIATION OF CEMENT USERS.—Annual Convention, Pittsburgh, Pa.—R. L. Humphrey, President, Harrison Building, Philadelphia, Pa.

Association of Connecticut Road Officials.

A third organization interested in the construction of roads has been formed in Connecticut. Temporary officers were selected at a meeting in Hartford as follows: President, W. Scott Eames, director of public works, New Haven; Secretary, Charles J. Bennett, superintendent of streets, Hartford; Executive Committee—Alfred H. Terry, city engineer, Bridgeport; Jas. H. MacDonald, State highway commissioner, Hartford; Robert E. Mitchell, city engineer, Willimantic; Frederick L. Ford, consulting engineer, New Haven, and Charles J. Bennett, superintendent of streets, Hartford.

It is expected that a score of cities will be represented in the society when it is formally organized, includ-

ing in its membership the selectmen, road superintendents and commissioners, and those interested in highway improvements in the towns and boroughs, as well as the principal cities throughout the State.

A fact which is well established in the minds of automobile tourists is that the line of demarcation between city streets and country roads is always very distinct, either in that the State highway has been completed to the city line, leaving a jumping off place until the city pavement is reached, or, if there is a pavement to the city line, the county and State highway officials have not been consulted with a view to building a State highway to join it, making one continuous trunk line for tourists to follow.

The Connecticut society expects to accomplish a great work for roads and pavements through closer co-operation between the various officials and departments which are charged with the responsibility of road and street construction and maintenance within the Commonwealth.

There are several subjects of importance to automobilists which the Connecticut society plans to consider; among them, the advisability of prohibiting the use of chains on automobile tires. It is argued that a year ago certain streets were put in first-class condition, but that they have been injured during the wet fall and rainy spring seasons from chains on automobiles, especially on cars passing between New York and Boston. If the use of chains is prohibited, it is proposed that the cities and towns should attempt to furnish a substitute by more sand and stone screenings on the oil roads and smooth surfaced pavements.

Another subject under consideration is the advisability of urging the adoption of a standard of wheel or body width for automobile trucks, in order that the width between curbs on curbed streets can be properly determined. Also as to whether on the outlying streets the hardened roadways should be increased in width, a plan which will certainly meet with the approval of automobilists which would provide that fast moving vehicles can meet and pass with greater safety without encroaching on the softer roadway shoulders which oftentimes give way, owing to the weight of the automobile, resulting in many serious and fatal accidents.

American Public Health Association.

The fortieth annual meeting of the association will be held in Washington, D. C., September 18 to 20, inclusive. This meeting will be held a week prior to the Fifteenth International Congress of Hygiene and Demography.

American Society of Municipal Electricians.

The seventeenth annual convention opened in Peoria, Ill., August 27, with President J. W. Kelley, Camden, N. J., in the chair. The president introduced Mayor Woodruff, who gave them the address of welcome. E. N. Neill, of Harrisburg, Pa., responded to the Mayor's address, telling how Peoria is advertised throughout the east by its vast distilleries and beautiful parks.

One hundred and fifty delegates registered the first day. Louis Gascoign, of Detroit, Mich., read a paper on "Cable Bending." A large delegation was expected from Wisconsin, but owing to heavy damage done by storm in that section of the country a few days before to the municipal lighting signal system in the State, they were unable to attend. A paper was read by W. S. Develin, of Pittsburgh, Pa., on "Underground Cables." T. C. O'Hearn, of Cambridge, Mass., spoke on "Grounding Street Boxes." It gave some pointers on the city fire alarm box trouble. After the reading of the paper the delegates attended the Ringling Bros. circus, this being part of the entertainment program. In the evening at the convention room a demonstration was given of 500,000 volts of electricity and several questions were discussed. These questions were: "How Does 500,000 volts feel?" "Will It Kill?" and "Is Glass an Insulator?" The instrument used in this illustration is the property of Camden Electrical Co., of Camden, New Jersey.

All of the sessions of the convention were held in the assembly room of the Jefferson Hotel. A complimentary dinner was given by the Gamewell Fire Alarm and Telegraph Company of New York, in the banquet room of the hotel.

Wednesday the session was opened with a paper by John W. Kelly, Jr., of Camden, N. J., on "Street Lighting," which took up the entire morning. In the afternoon W. L. Rheil, of Cincinnati, Ohio, spoke on the "Method of Testing and Inspecting Fire Boxes." He was followed by John Berry, of Indianapolis, with a short talk on "Handling Fire Alarms."

In the afternoon a boat ride was taken on the Illinois River. The boat left the landing at 2 o'clock and returned about 8 in the evening. The official photograph was taken in front of the hotel before they left on the boat trip. Refreshments were served on the boat while Jack Middleton and company entertained.

The Gamewell Fire Alarm and Telegraph Company of New York had a fine display of fire alarm boxes and telegraph stations. The other exhibitions were as follows: C. S. Knowles & Co., of Boston, Mass., who showed a complete line of electrical connections, etc. The Nelite Electrical Works had a nice display of electric lights, globes and attachments. Duplex Metal Works, of Chester, Pa., advertised the copper clad steel wire. Pass & Seymour, Inc., had a nicely arranged display. L. A. Bennett & Co. are the agents in the middle west for the National Metal Molding Co., of Pittsburgh, Pa. The Central Electrical Co. and the H. W. Johns Co. also had interesting displays.

On Thursday morning a paper was read by W. S. Boyd, of Chicago, on the "Electrical Inspection from the U. W. Standpoint," followed by Chas. H. Linn, of New York, N. Y., on "Municipal Inspection." The afternoon was taken up with papers by W. E. Wolgamott of Peoria, who spoke on the "Peoria Police Call and Flash Light System." Mr. Leo Firman, of Philadelphia, Pa., read a paper on "Locating and Clearing Trouble on the Lines and Cables."

Following these addresses the entire delegation accompanied by their wives took a trolley ride throughout the entire city.

The following officers were elected:

President—John W. Kelly of Camden, N. J.

First vice president—O. C. Trussler, of Indianapolis, Ind.

Second vice president—W. H. Arbuckle of Bayonne, N. J.

Third vice president—A. G. Sangster, of Saskatoon, Saskatchewan.

Fourth vice-president—V. A. Blakey, of Montgomery, Alabama.

Secretary—Clarence R. George, of Houston, Texas.

Treasurer—C. I. Diehle, of Harrisburg, Pa.

Finance Committee—Chairman, W. H. Flandrau, Mount Vernon, N. Y.; P. H. McManus, Wilkesbarre, Pa.; J. Leary, Hammond, Ind.

Executive Committee—Chairman, H. C. Bundy, Watertown, N. Y.; T. C. O'Hern, Cambridge, Mass.; Wm. V. Elliott, Elmira, N. Y.; W. E. Wolgast, Peoria, Ill.; A. I. W. Kittredge, New Haven, Conn.; C. W. Pike, Philadelphia, Pa.; H. A. Bowen, Cleveland, O.; W. B. Martin, Albany, N. Y.; John Berry, Indianapolis, Ind.; Robt. J. Gaskill, Fort Wayne, Ind.

Watertown, N. Y., was selected for the next meeting place.

South Dakota Good Roads Association.

The first good roads convention of South Dakota completed its work at Pierre, August 21, by the selection of officers for a permanent organization to be known as the South Dakota Good Roads Association, which is to have general supervision over the different good roads projects in the state, and to work for legislation which will help in road building.

The committee on permanent organization reported for president, J. W. Parmley of Ipswich; first vice-president, E. C. Issenhuth, Redfield; second vice-president, J. L. White, Sioux Falls; secretary, Ben M. Wood of Rapid City; treasurer, J. W. Campbell of Huron.

The officers selected are good roads men who have been active in the work. J. W. Parmley, the president, made the first move as a legislative member to change the road laws of the state, his efforts failing, and he meeting defeat in his efforts to again get back into the legislature, and he is now at the head of an organization which will ask for more than he dreamed of asking for in his original bill. Vice-President J. L. White is active in road and street work in and about Sioux Falls, and in this is only following his activities in other states before coming to South Dakota; Ben W. Wood, the secretary of the association, is also secretary of the Scenic Highway Association, and as such has helped to get action which has meant the spending of more money on that highway than on any other highway in the state, save possibly the Meridian road. Besides these gentlemen, with J. W. Campbell of Huron, for treasurer, the association is governed by an executive committee of seven, consisting of these four men, and one from each congressional district of the state, these selections being S. E. Morris of Mitchell for the first district; Professor H. Solberg of Brookings for the second district, and George V. Ayres of Deadwood for the third district. Professor Solberg has long been an advocate of a cross country highway crossing the state from Brookings on the east to Deadwood on the west, with Chicago as one end of the line and the Yel-

lowstone Park as the other. Mr. Ayres has been connected with the road work in Lawrence county in the past few years, which has cut away from old methods and put road building on a permanent business footing.

The committee on resolutions which reported Wednesday night commend generally the calling of the meeting, and the movement, with the men engaged in the work. They endorse the legislative work so far as it has gone, and also the trunk highway plans in the state. They recommend a permanent state organization to be rallied with county organizations, and further recommend such action as may be necessary to secure a tax upon automobiles for road purposes.

The one feature of road work which the engineers on the program attempted to impress in their talks on Wednesday was that no matter how well built a road may be, it will not so remain without a maintenance system to see that it is kept up as an efficient highway.

Michigan Good Roads Association.

The board of trustees of the Michigan Good Roads Association held a meeting last week to make arrangements for the state meeting to be held in Kalamazoo September 18 and 19. The trustees expect an attendance of 1,500 good roads enthusiasts, county road commissioners, mayors and presidents of villages and members of business men's associations from all over the state to be present.

"At this meeting we will prepare for the campaign for good roads to be waged next year," said Philip T. Colgrove, of Hastings, president of the association. "The biggest thing we hope to accomplish is the highway from Detroit to Toledo through Monroe county. That section of the state has the rottenest roads in Michigan. It is the gateway to the metropolis of the state, and the door is closed.

"In addition to Monroe county we will confine our campaign this year to the counties in the lower corner of the state immediately surrounding Detroit. Wayne county's concrete roads are known everywhere, and we hope to bring the people of Washtenaw, Monroe, Oakland, Livingston, Lenawee and Hillsdale counties to understand that the best investment they can make is in good roads.

"We will appeal to the boards of supervisors of these counties and get them to submit to the people the question of building roads under the county system. We will try to show them that the time has passed when they should build roads as their great-grandfathers used to build them. We submitted the question in 13 counties last year and won in 11 of them. We will send speakers into each county to educate the farmers and tell them just what they will gain by adopting the county road system.

"The meeting at Kalamazoo will be the opening gun in the campaign and we will have prominent road-builders and experts from all over the country there as speakers. I am sending out circular letters to the mayors, presidents of villages, supervisors and officers of business men's associations in every county in the state, urging them to send delegates to the meeting.

"Our aim is to abolish the scattered miles of improved roads about the state and establish a system of good

roads which will enable us to get from somewhere to somewhere, so that Michigan will no longer be tabooed by motorists and others who know that in this state they will have to plow through sand and mud."

PERSONALS

O'Neil, T. F., Columbus, O., has been appointed Chief of Police.

Russ, W. D., Dr., San Antonio, Tex., has been selected President of the Health Board.

O'Neill, Frank, Los Angeles, Cal., has been appointed Electrical Engineer for the Bureau of Fire Alarm and Police Telegraph.

Baldwin, H. C., representing Burnes & McDonnell, consulting engineers of Kansas City, Mo., has been in South Bend, Ind., for the past few days checking up the plans for \$200,000 worth of water works improvements, with Freyermuth & Mauer, architects.

McLoud, Paul, Albany, N. Y., has been appointed Chief Engineer of the Highway Department, succeeding Harry P. Willis. Mr. McLoud was assistant city engineer of Syracuse from 1897 to 1901.

Williams, Wm. F., City Engineer, New Bedford, Mass., has been appointed Chief Engineer of the Massachusetts Harbor and Land Commission.

Guerin, Wm., New York City, Deputy Fire Chief and head of the Bureau of Fire Prevention, has resigned and will take up the practice of law.

Betts, E. E., Chattanooga, Tenn., formerly engineer of the Chickamauga Park Commission, has resigned as Chief Engineer of the Hamilton County Road Commission.

Neill, Frank L., Philadelphia, Pa., has been appointed Assistant Chief of the Highway Bureau, and in charge of the Division of Street Cleaning.

McMillan, John, has been appointed City Engineer of South Pasadena, Cal., succeeding Mr. B. Dupuy.

Wieghardt, George, Baltimore, Md., has been selected as designing engineer on the proposed mechanical filtration plant which Mr. George W. Fuller, consulting engineer, of New York, has recommended for the city of Baltimore. Mr. Wieghardt was formerly on the engineering staff of the Baltimore Sewerage Commission.

Eisner, M. W., Chief Engineer of Bridges, Berlin, Germany, died recently.

Bromfield, Davenport, City Engineer of San Mateo, Cal., has been selected by the San Mateo County Highway Commission to act as consulting engineer in the \$1,250,000 highway project, for which the supervisors will call a bond election. Mr. Bromfield will assist County Surveyor J. V. Neuman.

Hill, A. B., New Haven, Conn., has been engaged as Consulting Engineer in connection with the development of the water system at Meriden, Conn.

The following mayors have been elected:

Texas.

San Antonio, A. H. Jones.

Louisiana.

Mandeville, Judge W. F. Davis.

Delaware.

Rehoboth Beach, Frederick A. Ross.

Florida.

Fort Myers, C. W. Carlton.

Arcadia, A. C. Freeman.

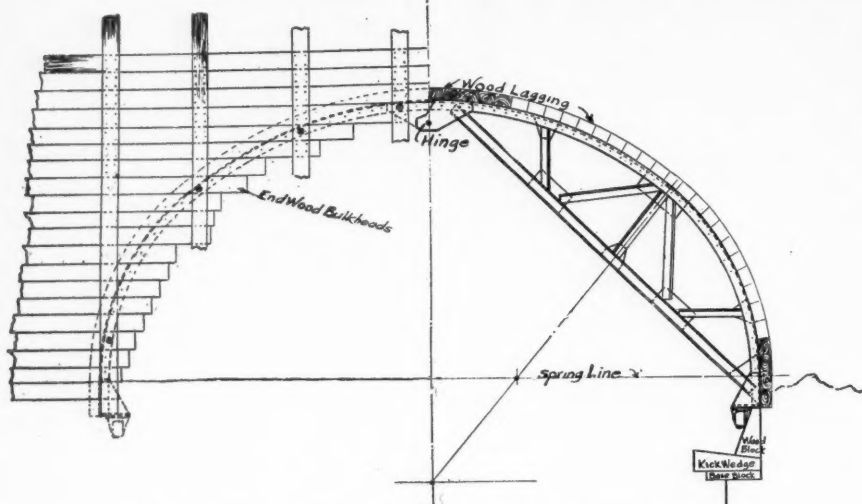
MUNICIPAL APPLIANCES

Steel Forms for Arch Bridge Construction.

The Blaw Steel Construction Company, Westinghouse Building, Pittsburgh, Pa., now manufacture steel forms on the general plan of those used in tunnel work, for the construction of

with economy, and be so located that any glare will not interfere with ordinary vision.

With the usual height and spacing, the greatest intensity of light should leave the lamp at an angle of about 20 degrees below the horizontal.



BLAW ARCH RIBS FOR CONCRETE BRIDGE FORMS.

masonry arch bridges, even of considerable length of span. The forms are not all steel like the smaller size, but consist of arch ribs to which the wooden lagging is attached. The ribs are placed at varying distances apart, according to the span, thickness of the concrete, etc. The particular advantage of the use of the steel ribs is that they make it possible to maintain a clear passage way under the arch while it is being built. By the use of these arches it is also possible to span a stream where the bracing of wood forms would be a very difficult and expensive operation.

The steel ribs are claimed to be practically indestructible, and to require no repairs, though used over and over again. They are claimed to insure absolute accuracy of construction, as they are designed and built sufficiently rigid to stand the strain to which they are to be subjected.

It is the custom of the Blaw Steel Construction Company to make a special study of each contract that they endeavor to secure, so that the most economical forms and form methods may be suggested to the contractor. The company modestly suggests that their experience on over six thousand contracts may be of value.

Poles for Edison Mazda Series Lamps.

The proper lighting of streets is now a duty of every city and town government, and even many county governments. Formerly there was a tendency to judge the success of a street lighting installation by the brightness of the units. Now it is recognized that the determining factors are the amount and distribution of light upon a street. The problems to be solved may be summarized as follows:

A sufficient amount of light must be supplied and so distributed as to give a uniform illumination.

Street lamps should have as low an intrinsic brilliancy as is compatible

The light should be steady, for flickering obviously reduces the illuminating efficiency of the lamps.

There should be good diffusion of the light rays so as to avoid deep shadows.

The lamp should be placed fairly high, thus giving more light at distant points and avoiding long distorted shadows from objects on the roadway.

The General Electric Company has designed a series of ornamental poles, shown in the illustration, which contribute to the solution of these problems.

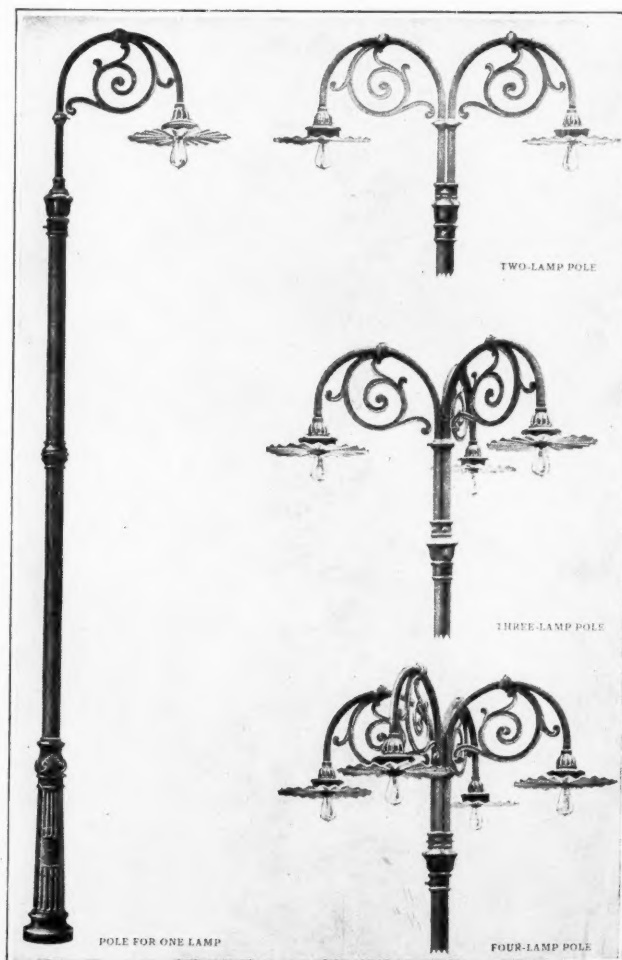
The reflectors are an important detail of these lighting units. They are known as the radial reflectors. They may be protected with a strong wire guard to protect the lamps against malicious breakage. The reflectors are made in three different sizes—15 in., 20 in. and 24 in. diameters. The 15 in. reflector is used for lamps of 32 candlepower. The 20 in. reflector for other lamps, up to and including 100 candlepower and the 24 in. reflector is used with the 200 and 350 candle-power lamps. The reflector is made of a stamped fluted steel disk, blue on top and heavily coated with

white enamel on the under side, thus making an efficient reflecting surface and an attractive appearance.

Portable Gasoline Engine and Saw.

The Globe Foundry and Machine Company, Sheboygan, Wis., manufacture a portable gasoline engine and circular saw suitable for contractors' purposes in cutting sheeting and braces for trenches, lumber for concrete forms, and in fact for any purpose within its capacity. The illustration gives a good idea of the outfit. The engine which is 9-horse-power, is claimed to be unusually simple in construction and durable.

The truck is made of iron and steel. The cylinder is separate from the frame and is bolted with six bolts to the frame; it has ground joints. Its water jacket is separate, and its joints are all grooved, with a round packing between. The cylinder head is also provided with a water jacket. The valves are located in the cylinder head and are perpendicular. The valves are poppet type and are ground; this makes the valves air tight, and they can also be easily removed without interfering with the cylinder head at all. There is no packing; the exhaust and inlet valves are in the center of the cylinder, and the spark plug is also in the cylinder; this ignites the gas in the center of the combustion chamber, and there are no side pockets for gas to accumulate when compression is made. The valves are arranged so that when the exhaust



EDISON STANDARDS FOR MAZDA LAMPS.

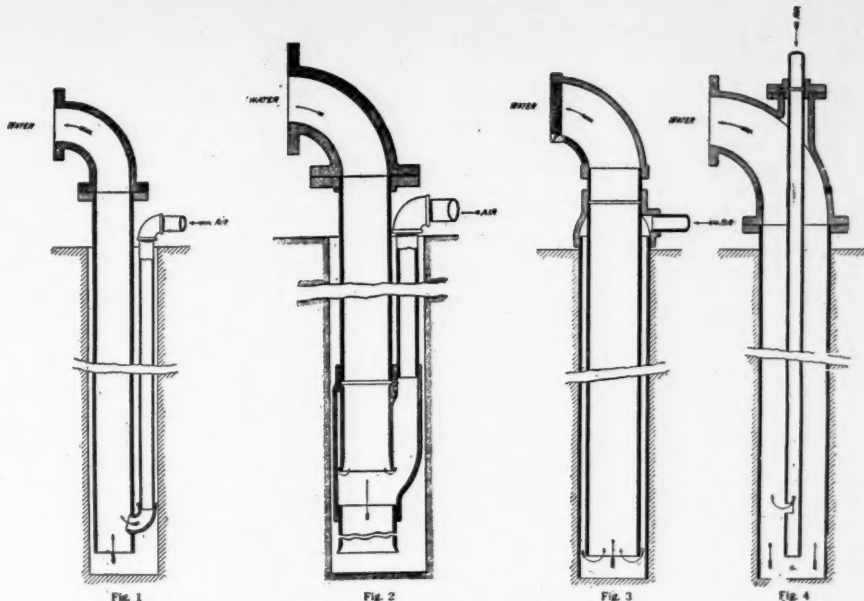
valve opens the inlet valve is held shut by a rod. The gasoline is admitted direct into the cylinder together with the required amount of air to form a perfect combustible mixture. This mixture is retained in the cylinder by an automatically acting suction valve. After being compressed the charge in the cylinder is ignited by an electric spark furnished from a small battery. The governor controls the number of explosions in exact proportion to the amount of work, maintaining a uniform speed. The exhaust valve is held open and relieves the engine from compression when not requiring an explosion. This also causes the friction to be relieved which would otherwise have been caused by compression. The gasoline engines are all furnished with a tank, battery, switch, spark coil, muffler, short exhaust, water pipes, full set of oil cups, oil cans, wrenches, etc.

The Air Lift System for Water Works.

During recent years much progress has been made in the art of pumping water by compressed air. The Ingersoll-Rand Company has done pioneer work in this line since the introduction of the Pohle air lift in 1892, being the first to employ Dr. Julius G. Pohle, who is acknowledged to be the original inventor of the air lift. Later the company acquired all right, title and interest in the Pohle Air Lift Patents. At first all systems for lifting water or liquids by compressed air were admitted to be extravagant, but with a large experience, and with marked improvements in air compressor economy, the air lift has made valuable strides. A properly installed air lift system requires the attention of the engineer, who should, in the first place, specify a suitable compressor provided with automatic attachments, and he should design the air and water pipes to accomplish the best results. Each case should be treated by itself, and advice given in accordance with the conditions that exist in each well to be pumped. The illustrations show four distinct methods of well piping. Each has its uses and will only operate most efficiently and economically under certain conditions, such as the height of lift, the volume of water, the depth of casing and the well strata.

METHOD NO. 1, POHLE AIR LIFT, FIG. 1.

In the Pohle or side inlet, shown in Fig. 1, the air and water pipes are placed alongside of each other in the well and connected at the bottom with



FITTINGS FOR PIPING WELLS FOR AIR LIFT SYSTEM.

an end piece. This method should be used when the well is sufficiently large to admit of the air and water pipes being placed side by side from top to bottom. This is the most economical system, and its advantages are marked at medium and high lifts. The Ingersoll-Rand Company make standard side inlet devices or foot pieces and clamps for this type in sizes varying from 1/2-inch air connection, 1-inch water pipe, for 3-inch well having a maximum economic capacity on moderate lifts of 7 gallons per minute up to 2-inch air connection, 6-inch water pipe, for 10-inch well having a maximum economical capacity on moderate lift of 350 gallons per minute. The size of the air pipe in the well depends upon its length and the volume and pressure of air to be used. In cases of necessity the capacities can be increased 20 to 40 per cent., but at decreased efficiency in operation, depending on the height of the lift and other conditions. Under some conditions, the given capacities have been doubled.

METHOD NO. 2, POHLE AIR LIFT, FIG. 2.

Another adaptation of the Pohle system is shown in Fig. 2. This is the Pohle-Annular foot piece, a special device for connecting the air and water pipes, and for the proper admission of air to the rising column.

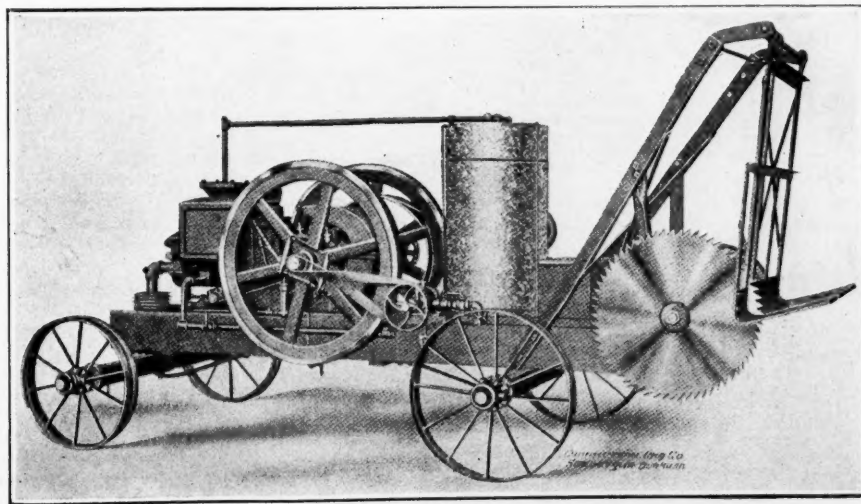
Compressed air fills the annular space or ring surrounding the uptake pipe, and is free to enter the rising column at all points of its periphery, at the same time acting without obstructing or contracting the discharge pipe anywhere. The material is high grade composition, especially designed for strength and to withstand the action of bad water.

These foot pieces are made in stock sizes, varying from 20 to 300 gallons per minute, the maximum economical capacity is based on 60 per cent. submergence and a discharge of 12 gallons of water per minute per square inch area of discharge pipe in the smaller diameters, and 15 gallons per minute per square inch in the larger sizes.

The tubular foot piece aims to provide a means for actually dividing the air into fine streams, which has been found to be the best condition in which air can be introduced into the rising main. Air from the supply pipe fills the hollow base of the foot-piece. The base-plate is studded with 1/4-inch wrought iron pipes about 18 inches long, extending upwards to a point where the water passes from the foot-piece into the discharge pipe, and at this juncture the bubbles of air are released.

Ample space is provided for the inflow of water to the pump or foot-piece through the bottom openings augmented by larger side inlets. Thus we have in the foot-piece designed for a 5-inch discharge pipe a subdivision of air into thirteen 1/4-inch streams, with the added advantage that these separate small pipes will tend to act as governors to control the discharge of the air.

As the lift increases the necessary ratio of submergence to lift decreases. For a given lift and quantity of water the necessary size of discharge pipe increases as the submergence decreases. Diameter of air pipe depends upon the quantity of air required and its pressure. Air pipe sizes listed are the standard openings in the foot-pieces. The air pipe used can be of larger or smaller diameter by using suitable reducing fittings. A tail, or drop, pipe below the foot-piece tends to steady the flow, and prevent the water "backing up" or reversing in the well casing. A full length, 18 to



PORTABLE GASOLINE ENGINE AND SAW.

20 feet is used wherever possible, down to 4 feet, depending upon depth of well.

METHOD NO. 3.

In some instances a well does not admit the use of the side inlet system when the Saunders air lift system may be used. A central tube is suspended inside the well, while the air passes down between it and the well casing. The water is then discharged through the central tube, as shown in Fig. 2.

In estimating the capacity of this system, it is usual to allow quantities as follows: Height of lift, 25 ft., 15 to 20 gallons to each square inch area of water pipe, and for 50 ft. to 125 ft. height of lift 12 to 15 gallons to each square inch area of water pipe.

METHOD NO. 4.

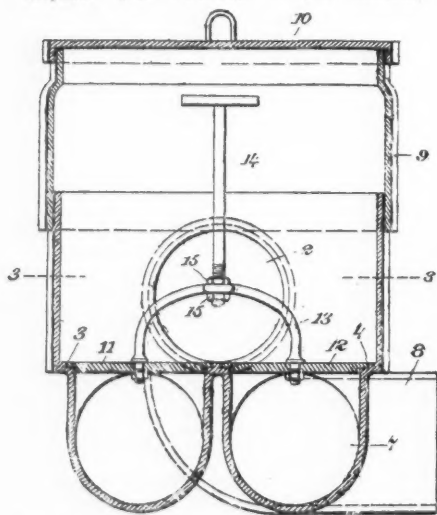
The third or central air pipe system reverses the arrangement already described, and is used to obtain the greatest possible output for a given size of well casing. The air pipe is suspended inside. The air passes down this central pipe, the water and air discharging between the air pipe and the well casing. The size of the air pipe depends on length and volume of air it is to carry and pressure. This is not always as economical as 1 and 2, but may be used where the well is very strong and a great deal of water is wanted from a few wells.

For this installation the proper size of air pipe for different sized casings and the capacities vary from 3½-inch casing, 1¼-inch pipe, 80 to 100 gallons; to 10-inch casing, 2½-inch pipe, 775 to 1,000 gallons per minute.

PATENT CLAIMS

1,035,926. SEWAGE-DIVERTING GATE. Edward L. Wagner, New York, N. Y., assignor to New York Sewage Disposal Co., a Corporation of New York. Serial No. 684,902.

A sewage-diverting device comprising the combination of a chamber having an inlet opening at one side, and a plurality of outlets at the bottom of uniform size, symmetrically disposed with reference to one another, a



series of covers for said outlets one less in number than the outlets and a handle by which all said covers are connected together, whereby said covers may be placed over any set of outlets equal in number to the number of covers, closing the same and permitting the flow of sewage into the uncovered outlet.

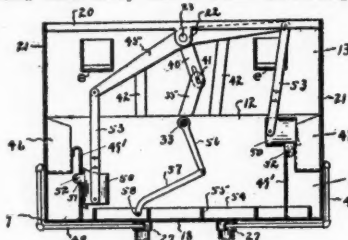
1,035,787. METHOD OF MAKING PAVEMENTS, ROADS OR STREETS, AND CELLAR-FLOORS OR THE LIKE. William T. Headley, Philadelphia, Pa., assignor to Headley Good Roads Company, Wilmington, Del., a Corporation of Delaware. Serial No. 651,543.

The herein described method of producing a pavement or road, which consists in first laying a base of hydraulic cement concrete;

second, superimposing thereon a wearing course of concrete prepared by coating an aggregate with an emulsion of bitumen and water, mixing sand and cement with the coated aggregate, sprinkling then the mixture with the mulsion and third, compressing.

1,035,436. WATER-SOFTENING APPARATUS. Frederick C. Hanson, Omaha, Nebr. Serial No. 665,539.

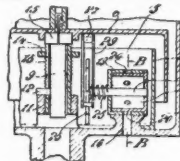
In a water softening apparatus, the combination with an oscillatory shaft, a spout mounted upon said shaft and tiltable therewith, a water supply pipe disposed above said spout, a pair of compartments into which said spout alternately discharges, a rocking lever of T form secured to the oscillatory shaft, a second oscillatory shaft, arms extending from



said second oscillatory shaft upon opposite sides thereof, buckets pivotally mounted at the outer end of said arms, links pivotally connected to the outer portions of the T arms and to the lower inner corners of said buckets, and means for actuating the second oscillatory shaft from the first named oscillatory shaft and in unison therewith.

1,035,477. APPARATUS FOR LIGHTING AND EXTINGUISHING GAS-LAMPS. Thomas M. Sandiford, Masterton, New Zealand, assignor to The Automatic Gas Pressure Lamp Company Limited, Masterton, New Zealand, a Corporation of New Zealand. Serial No. 614,810.

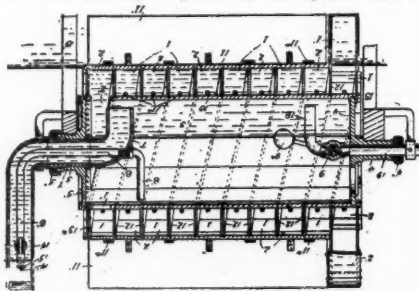
In apparatus of the kind described, a horizontal drum open at the rear end, an inner drum fitting said drum and open at the front end, an opening being provided in the bottom of the said outer drum for the passage of gas



therethrough, an opening being provided in the top of the said outer drum for the passage of gas therein, and by-pass openings being provided at intervals in the said inner drum in line with the said openings in the outer drum, and a spindle projecting from the end of said inner drum through the front of said outer drum, substantially as described.

1,035,993. AIR-LIFT PUMP. Walter B. Moore, Seattle, Wash. Filed Feb. 28, 1911. Serial No. 611,512. Renewed. Serial No. 670,728.

A pump comprising a rotatable pressure chamber having a plurality of spiral induc-



tion passages, a relatively fixed induction pipe communicating with the lower portion of said chamber, and a delivery pipe communicating with the upper portion of said chamber.

1,036,461. PROCESS OF MAKING A FIRE-EXTINGUISHING COMPOUND. Edward M. Davidson, New York, N. Y., assignor to Pyrene Manufacturing Co., a Corporation of Delaware. Original application filed April 5, 1910. Serial No. 553,570. Divided Serial No. 663,939.

The process of making a fire extinguishing compound consisting in taking a quantity of carbon tetrachlorid and passing anhydrous ammonia gas into the same under pressure, agitating the solution, then passing anhydrous carbon dioxide into the solution under pressure, and again agitating the solution.

INDUSTRIAL NEWS

Cast-Iron Pipe. Chicago. Quotations: 4-inch, \$30; 6 to 12-inch, \$28; 16-inch and up, \$27. Birmingham manufacturers are advancing quotations in response to the rise in pig iron. Orders are coming in at a rate that insures continuous operation for some time to come. Shipments are heavy and accumulations are small. The new plant at Holt is in operation. Quotations: 4-inch, \$25; 6-inch and up, \$23. New York—Few public lettings are announced. Private buying continues in about the same volume as for some time, and price are stiffening. Quotations: 6-inch, \$22.50 to \$23.

Lead.—While the volume of business is not exceptional there is a bullish feeling in the trade. Quotations: New York, 4.65c; St. Louis, 4.575c.

Crushing Plant.—The Benton Stone & Crusher Company, Springfield, Mo., with \$100,000 capital stock, plans the immediate establishment of a crushing plant. The incorporators are George Schurer, John Brandon, Sidney Beacon and James Boyd.

Wheel Scrapers.—The Western Wheel Scraper Company, Aurora, Ill., is preparing for the erection of a new shop to be 75x360 ft. and the new power house 90 ft. square. The improvements are to be made at an estimated cost of \$150,000.

Consulting Engineer.—The firm name of the J. S. Worley Co., consulting engineers, Kansas City, Mo., has been changed to Wordley & Black and the address is now the Reliance Building.

Rubber Tires.—The Firestone Tire & Rubber Company, Akron, Ohio, will enlarge its plant by the erection of a steel and concrete building, 95x125 ft., five stories. The general contract has been awarded to the Hunken-Conkey Construction Company, Cleveland.

New Superheater.—The Heine Safety Boiler Co., of St. Louis, Mo., is placing on the market a superheater of new design which is claimed to embody a number of improvements over the type formerly manufactured.

Gas Engines.—The Foos Gas Engine Company, Springfield, O., has increased its capital stock from \$260,000 to \$310,000, and contemplates adding to its manufacturing facilities at an early date.

Town Planning.—The American consul at Huddersfield, England, reports that the Housing and Town Planning Committee of the corporation invite competitive designs from architects and surveyors for the laying out of certain areas within the county borough and part of the adjacent suburb. Three prizes are offered as follows: First prize, \$510; second prize, \$255; and third prize, \$127. Copies of the conditions of competition can be obtained from the Borough Engineer, 1 Peel Street, Huddersfield, upon depositing \$10.22, which will be refunded upon the receipt of bona fide designs. The designs must be delivered at the borough engineers' office not later than October 21, 1912. For further details address No. 9380, Bureau of Manufactures, Washington, D. C.

(Continued on page 360.)

THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Concrete Work—Sanitation, Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards.

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREET IMPROVEMENTS				
Ohio.....	Youngstown.....	Sept. 7, noon.....	Constrn. 1 mile macadam	G. M. Montgomery, Engr.
Ohio.....	Dayton.....	Sept. 7, noon.....	Constrn. walk, shelter house, &c., in park.	Franklin Rice, Pres.
Indiana.....	Richmond.....	Sept. 7, 11 a.m.....	Constrn. gravel roads	L. S. Bowman, Co. Aud.
New York.....	New Castle.....	Sept. 7, 11 a.m.....	Constrn. 4 miles road.....	Town Clerk.
Mississippi.....	Aberdeen.....	Sept. 7.....	Constrn. 17 miles highway	E. S. Davies, Sec.
Wisconsin.....	Marion.....	Sept. 8.....	Constrn. 15,000 sq. yds. pavement.....	E. A. Scott, City Engr.
Ohio.....	Janesville.....	Sept. 9.....	Constrn. 23,000 yds. macadam.....	J. P. Hammarlund, City Clk.
New York.....	Albany.....	Sept. 9, 1 p.m.....	Constrn. 87 routes of State highways.....	C. Gordon Reel, Supt. Hways.
Ohio.....	East Youngstown.....	Sept. 9.....	Constrn. brick pavement	P. J. Carney, Vil. Clerk.
Alabama.....	Marion.....	Sept. 9.....	Constrn. 4 miles gravel road	W. S. Kellar, St. Hway Engr.
W. Virginia.....	Huntington.....	Sept. 9, 1.30 p.m.....	Imp. and paving number streets	A. B. Maupin, City Engr.
Iowa.....	Waterloo.....	Sept. 9, 7.30 p.m.....	Constrn. 5,300 yds. asphalt.....	R. L. Degon, City Clerk.
Ohio.....	Ottawa.....	Sept. 10, noon.....	Constrn. stone roads	J. E. Roose, Co. Aud.
Ohio.....	Cincinnati.....	Sept. 10, noon.....	Constrn. granite and asphalt pavement.....	V. T. Price, Dir. Pub. Ser.
Ohio.....	Canal Dover.....	Sept. 10, noon.....	Paving several streets	J. J. Jurgens, Clk. Dir. Pub. S.
Illinois.....	Joliet.....	Sept. 10, 10 a.m.....	Constrn. brick paving	W. S. Welch, Clk. B. L. I.
Iowa.....	Des Moines.....	Sept. 11, 9 a.m.....	Constrn. cement curb and gutter	Jas. R. Hanna, Mayor.
New Jersey.....	Vineland.....	Sept. 12.....	Constrn. 7,700 lin. ft. bit. macadam.....	C. W. Marshall, Clerk.
Louisiana.....	Shreveport.....	Sept. 12.....	Constrn. hard surface permanent rdwy, 5 miles	J. T. Bullen Co., Engr.
Iowa.....	Cedar Rapids.....	Sept. 13.....	Constrn. asphalt or bit. pavement sev. sts..	L. J. Storey, City Clerk.
Mississippi.....	Booneville.....	Sept. 14, 2 p.m.....	Imp. 25 miles roads	G. L. Holly, Sec. Comr.
South Carolina.....	Columbia.....	Sept. 14, noon.....	Maintain roads	County Supervisors.
Ohio.....	Hamilton.....	Sept. 14, 10 a.m.....	Constrn. gravel road in Oxford Twp.....	W. W. Crawford, Co. Aud.
Illinois.....	Mattoon.....	Sept. 15.....	Constrn. 6,000 sq. yds. brick paving	E. T. Guthrie, Pres. B. L. I.
Alabama.....	Rockford.....	Sept. 16.....	Grading & Surfacing 6 miles of road.....	J. N. Crawford, Probate Judge.
Ohio.....	Lisbon.....	Sept. 17, 1 p.m.....	Constrn. 3 miles brick & Tarvia macadam.....	H. C. McCamon, Pres. Comrs.
New Jersey.....	Delair.....	Sept. 19, 8 p.m.....	Constrn. paving &c. about pumping plant.	C. H. Greer, Chrmn. Com.
W. Virginia.....	Huntington.....	Sept. 19, 1.30 p.m.....	Paving McCoy road	A. B. Maupin, City Engr.
Ohio.....	Newton Falls.....	Sept. 22.....	Constrn. macadam on 3 roads	J. B. Beard, Township Clerk.
Florida.....	De Funiak.....	Sept. 23, noon.....	Constrn. 60 m. sand clay roads in Twp. 3.	C. H. Gordon, Co. Clerk.
Alabama.....	Clanton.....	Sept. 23.....	Constrn. 6 miles gravel roads	County Commissioners.
Alabama.....	Decatur.....	Sept. 24.....	Constrn. macadam roads	County Commissioners.
Ohio.....	Toledo.....	Sept. 24, 10 a.m.....	Constrn. macadam road	C. J. Sanzenbacher, Co. Aud.
Illinois.....	Mattoon.....	Oct. 1.....	Constrn. 10,000 yds. brick paving	E. T. Guthrie, Pres. B. L. I.
SEWERAGE				
Ohio.....	Marion.....	Sept. 8.....	Constrn. 3,000 ft. 8 and 12-in. pipe sewer..	E. A. Scott, City Engr.
Oregon.....	Eugene.....	Sept. 9, 8 p.m.....	Constrn. sewerage system	R. S. Bryson, City Recorder.
New Jersey.....	South River.....	Sept. 9.....	Constrn. sewage tank and pumping sta..	C. Anderson, Boro. Clk.
Ohio.....	Salem.....	Sept. 9, noon.....	Constrn. sanitary sewer	D. H. Rummell, Dir. Pub. Ser.
Missouri.....	St. Louis.....	Sept. 10.....	Constrn. sewer in Rocky Branch Joint	Ed. Pub. Impts.
Texas.....	Clarksville.....	Sept. 10.....	Con. sanitary sewer sys. & disposal plant.	J. R. Webb, City Clerk.
New Jersey.....	Newark.....	Sept. 10, 2 p.m.....	Constrn. Sec. 16 Passaic Valley sewer...	Sewerage Comrs.
Illinois.....	Springfield.....	Sept. 10.....	Constrn. 1,350 ft. 12 & 18-in. clay pipe...	J. S. Schnepf, Mayor.
Idaho.....	Moscow.....	Sept. 14.....	Constrn. storm sewer	City Clerk.
Iowa.....	Tipton.....	Sept. 16, 7.30 p.m.....	Constrn. sewers several streets	P. D. Letelsen, City Clerk.
Iowa.....	Tipton.....	Sept. 16.....	Constrn. 10 miles 8 to 15-in. sewer	City Clerk.
New Jersey.....	Caldwell.....	Sept. 16.....	Constrn. sewers	John Espy, Mayor.
Georgia.....	Douglas.....	Sept. 17.....	Constrn. 4 1/2 miles 8 to 15-in. pipe sewer.	City Clerk.
New York.....	Mamaroneck.....	Sept. 17.....	Constrn. 2,700 ft. sewers.....	J. M. Duffy, Village Engr.
Ohio.....	Piqua.....	Sept. 17.....	Constrn. 4,750 ft. sanitary sewer.....	A. W. Burton, Dir. Pub. Serv.
So. Carolina.....	Blackville.....	Sept. 17.....	Con. 14,000 ft. pipe sewer & disposal plant.	City Clerk.
Georgia.....	Douglas.....	Sept. 17, 3 p.m.....	Constrn. 3 m. 8 to 12-in. clay pipe sewers.	J. D. Knowles, City Clk.
Wisconsin.....	Richland Centre.....	Sept. 17, 4 p.m.....	Con. 8-in., 10-in. & 12-in. san. sewers, &c.	R. Sutton, City Clerk.
Louisiana.....	New Orleans.....	Sept. 19.....	Con. piping & auxiliaries for power house.	F. S. Shields, Sec.
So. Carolina.....	Blackville.....	Sept. 20.....	Constrn. sewer system	W. A. Gyles, City Clerk.
Texas.....	Austin.....	Sept. 24, 10 a.m.....	Constrn. 7 m. 6 to 36-in. sanitary sewers.	M. C. Welborn, Chief Engr.
Ohio.....	Urbana.....	Sept. 28.....	Constrn. 14 m. 8 to 20-in. vitrified sewers.	J. D. McCarty, Dir. Pub. Ser.
Illinois.....	Mattoon.....	Oct. 1.....	Constrn. 4,500 ft. 14 to 22-in. clay pipe...	E. T. Guthrie, Pres. B. L. I.
WATER SUPPLY				
Mass.....	Russell.....	Sept. 7, 2 p.m.....	Furn. 260 tons 4-in. c-i. pipe and spe-	E. D. Parks, Ch. Bd. Wtr. Comrs.
Ohio.....	Ravena.....	Sept. 9.....	Furn. cast iron pipe, hydrants, valves, &c.	W. H. Linton, Dir. Pub. Ser.
Illinois.....	Olney.....	Sept. 9.....	Constrn. extension to water works	B. A. Lain, City Clerk.
Ohio.....	Portsmouth.....	Sept. 9, noon.....	Constrn. reinforced concrete reservoir...	T. C. Patterson, Co. Aud.
Illinois.....	Charleston.....	Sept. 10, 2 p.m.....	Constrn. elevated steel tank	Water Board.
Illinois.....	Geneseo.....	Sept. 10, 8 p.m.....	Constrn. casing around supply pipe	B. Lacher, City Clerk.
Alabama.....	Dothan.....	Sept. 10.....	Constrn. reservoir and light plant	B. R. Pilcher.
New York.....	New York.....	Sept. 10, 11 a.m.....	Con. superstructure for siphon chambers..	Bd. Water Supply.
New Jersey.....	Newark.....	Sept. 10.....	Furn. 50 tons c-i. pipe and specials.....	Passaic Val. Sewerage Comrs.
Virginia.....	Norfolk.....	Sept. 10.....	Constrn. pit & pump house at Navy Yard.	Lt. Col. C. L. McCawley.
So. Carolina.....	St. George.....	Sept. 10.....	Constrn. water works	Commissioners.
Minnesota.....	Cloquet.....	Sept. 10.....	Constrn. water works and sewer system..	W. E. Hawley, City Engr.
California.....	Los Angeles.....	Sept. 10.....	Furn. 402 tons c-i. pipe, valves, &c.....	P. P. Vroman, Sec.
Florida.....	Winter Park.....	Sept. 10, 4 p.m.....	Constrn. water works	Town Clerk.
Illinois.....	Bellwood.....	Sept. 11, 8 p.m.....	Constrn. steel tank and tower	J. T. Fippinger, Vil. Pres.
Indiana.....	Huntington.....	Sept. 16, 7.30 p.m.....	Constrn. 6-in. water mains	Louis Bamberger, City Clerk.
Ohio.....	Bradford.....	Sept. 16, noon.....	Constrn. 2,500 ft. 4 & 6-in. c-i. pipe	Kenneth Little, Vil. Clerk.
Ohio.....	Nottingham.....	Sept. 16, noon.....	Furn. 450 tons c-i. water pipe & specials.	J. C. Steinicke, Vil. Clerk.
So. Carolina.....	Cheraw.....	Sept. 17, 3 p.m.....	Constrn. water works, including pump.	Pub. Works Com.
Indiana.....	South Bend.....	Sept. 18.....	Constrn. 6,000,000 gal. reinforced concrete	
New Jersey.....	Camden.....	Sept. 19, 8 p.m.....	Constrn. 5,000,000 gal. pumping plant....	O. C. Bastin, Pres. Bd. P. W.
Wisconsin.....	La Crosse.....	Sept. 19, 2 p.m.....	Constrn. water works extension	H. M. Herbert, Chief Eng.
So. Carolina.....	Blackville.....	Sept. 20.....	Constrn. water works	J. T. Day, Chrmn. B. P. W.
Arizona.....	Phoenix.....	Sept. 23.....	Furn. 100 4 and 6-in. hydrants	W. A. Gyles, City Clerk.
				V. A. Thompson, Supt.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Virginia.....	Portsmouth.....	Sept. 24, noon....	Dredging canal	W. G. Parker, Pr. Water Comrs.
Louisiana.....	Lake Providence...	Sept. 24.....	Installing boiler and pump	W. T. Bell, Mayor.
Oregon.....	Sheridan.....	Sept. 26.....	Furn. quantity of pipe 1/2 to 2-in; fit'gs, &c.	City Clerk.
Georgia.....	Zebulon.....	Oct. 1.....	Constructing water works system.....	M. M. Head, Mayor.
LIGHTING AND POWER				
New York.....	New York.....	Sept. 9, 2.30 p.m.	Install. 2 high pressure boilers in hospital.	M. J. Drummond, Comr.
Georgia.....	Macon.....	Sept. 10.....	Lighting city for 5 years	City Council.
Ohio.....	Columbus.....	Sept. 10.....	Furn. 3 transformers	S. A. Kinnear, Dir. Pub. Ser.
Minnesota.....	Olivia.....	Sept. 10.....	Furn. gas producer, engine, &c	J. Flaschenrein, Vil. Recorder.
Illinois.....	Bellwood.....	Sept. 11, 8 p.m....	Furn. 35 horse-power oil or electric motor.	P. H. Correll, Vil. Clerk.
Ohio.....	Cleveland.....	Sept. 12, noon....	Furn. conductor cable	W. J. Springborn, Dir. Pub. Ser.
Canada.....	Regina, Sask.....	Sept. 14.....	Furn. steam turbine unit, switchb'd, &c..	A. W. Pool, City Clerk.
Connecticut.....	Hartford.....	Sept. 15.....	Furn. designs for lighting standard	Com. Business Men's Assn.
Florida.....	St. Petersburg.....	Sept. 19, noon....	Supply, city with gas.....	W. F. Devine, City Clk.
Louisiana.....	New Orleans.....	Sept. 19.....	Constrn. piping & auxil. at power plant..	F. S. Shields, Secretary.
Pennsylvania.....	Philadelphia.....	Sept. 24, noon....	Furn. posts and maintaining gasoline or similar lamps	M. L. Cooke, Dir. Pub. Ser.
FIRE EQUIPMENT				
Dist. Col.....	Washington.....	Sept. 9, 2 p.m....	Furnishing gasoline pumping engine & hose wagon combined, 1 gasoline aeria hook & ladder truck, new boiler and rebuilding engine No. 1.....	C. H. Rudolph, Comr.
Ohio.....	Circleville.....	Sept. 16.....	Furnishing 1 motor combination pumpin engine & hose wagon.....	Wm. Miller, Dir. Pub. Safety.
Georgia.....	Atlanta.....	Oct. 2, 4 p.m....	Furn. Cent. office equip. for fire alarm tel.	Board of Fire Masters.
BRIDGES				
Illinois.....	Quincy.....	Sept. 7, 2 p.m....	Constrn. steel and concrete bridge	J. W. Jacobs, Town Clerk.
Ohio.....	Hamilton.....	Sept. 7, 10 a.m....	Constrn. bridge	W. W. Crawford, Co. Aud.
Pennsylvania.....	York.....	Sept. 9, 10 a.m....	Constrn. number bridges	W. H. Strine, Co. Clerk.
New Jersey.....	Newark.....	Sept. 9, 3 p.m....	Constrn. extensions of stone bridges	Jos. Owen, Co. Engr.
Illinois.....	Eureka.....	Sept. 9, 10 a.m....	Constrn. reinforced concrete bridge	Bd. Supervisors.
Canada.....	Collingwood, Ont.	Sept. 9, 6 p.m....	Constrn. reinforced concrete bridge	John Wilson, Architect.
Ohio.....	St. Clairsville.....	Sept. 9.....	Constrn. several concrete bridges	E. Campbell, Co. Aud.
New York.....	Greenburg.....	Sept. 10, 2.30 p.m.	Paving & waterproofing bridge.....	Town Clerk.
Ohio.....	Toledo.....	Sept. 10, 10 a.m....	Repairing bridge	C. J. Sanzenbacher, Co. Aud.
Nebraska.....	Nelson.....	Sept. 11.....	Constrn. and repairing bridges for year..	County Clerk.
Ohio.....	Cincinnati.....	Sept. 13, noon....	Con. concrete bridge in Sycamore Twnshp.	County Commissioners.
Indiana.....	Terre Haute.....	Sept. 15.....	Constrn. reinforced concrete bridge	N. Wallace, Co. Aud.
Ohio.....	Toledo.....	Sept. 17, 10 a.m....	Constrn. miscellaneous bridge work.....	C. J. Sanzenbacher.
Minnesota.....	Blue Earth.....	Sept. 25, 1 p.m....	Constrn. 2 concrete bridges	J. L. Herring, Co. Aud.
MISCELLANEOUS				
Mass.....	New Bedford.....	Sept. 9, 7.30 p.m.	Constrn. shelter house & equipment at Hathaway Playground	C. P. Sawyer, Clerk of Com.
Virginia.....	Portsmouth.....	Sept. 9.....	Furn. auto patrol wagon	J. E. Johnson, Ch. Police Com.
Pennsylvania.....	Harrisburg.....	Sept. 9, 2 p.m....	Constrn. concrete bottom for creek.....	D. E. Tracy, Sec. Bd. Pub. Wks.
Pennsylvania.....	Scranton.....	Sept. 9, 7.30 p.m.	Collecting ashes and refuse from schools..	E. D. Fellows, Sec.
Dis. Columbia.....	Washington.....	Sept. 9, 2 p.m....	Furn. 500 tree guards	C. H. Rudolph, Chrmn. Comrs.
Indiana.....	Indianapolis.....	Sept. 10, 10 a.m....	Rebuilding brick barn at Marion Co. asy..	W. T. Patten, Auditor.
Indiana.....	Indianapolis.....	Sept. 10, 10 a.m....	Furn. 10 or 12 ton road roller	W. D. Patten, Co. Aud.
New York.....	Albany.....	Sept. 10.....	Constrn. barge canal terminal	D. E. Peck, State Supt.
Maryland.....	Baltimore.....	Sept. 11.....	Constrn. concrete retaining wall	Harbor Board.
New York.....	New York.....	Sept. 12, noon....	Constrn. Sec. 1, Route 11B, Fourth Ave. Brooklyn R. T. railroad.....	Pub. Serv. Comm.
New York.....	New York.....	Sept. 12, 3 p.m....	Constrn. additions to playground, house..	C. B. Stover, Pres.
Illinois.....	Chicago.....	Sept. 18, 11 a.m....	Disposing of garbage for 5 years.....	L. E. McGann, Comr.
Florida.....	Bradentown.....	Oct. 7.....	Constrn. court house and jail	R. H. Roesch, Clerk.

STREET IMPROVEMENTS

Claremont, Cal.—Town meeting has been called for purpose of discussing oiling of streets.

Downieville, Cal.—Petition is in circulation throughout this county having in view bond issue to be voted upon at next general election. This provides for issue of bonds to amount of \$100,000 to be expended exclusively for constructing and improving roads throughout county. Among new roads in contemplation are one to connect Sierra City and Plumas County, via Gold Lake, another connecting Downieville and Packer Flat, and one along the North Yuba River, via Brady City, to connect with the Marysville Road.

Fairmead, Cal.—A strong effort is being made in this county to get Board of Supervisors to call election submitting matter of issuing bonds of \$600,000 for highway purposes before voters.

Los Angeles, Cal.—Board of Public Works will consider appropriation of \$18,000 with which to purchase 15,000 barrels of oil to be used in city streets.

Los Angeles, Cal.—Petitions have been received asking for various street improvements.

Los Angeles, Cal.—Bids for at least 50 sprinkling wagons to care for work of wetting down streets next summer should be advertised for not later than January 1, according to communication sent by Board of Public Works to Council. In order to relieve situation at present Council is asked to appropriate \$18,000 for purchase of 15,000 barrels of oil to be used in laying the dust.

Oakland, Cal.—Resolutions have been adopted for improvement to various streets.

Potrero, Cal.—Paving of Kentucky st. has been ordered.

San Francisco, Cal.—Engineering Bureau of the Board of Public Works has been instructed to prepare estimate of cost of improvement of San Bruno ave., north of county line.

Washington, D. C.—The Simmons good roads provision has been adopted. This appropriates \$500,000 for experimental road construction, with joint committee to study proposition.

Jacksonville, Fla.—Paving Committee of City Council is discussing various streets to be paved and character of paving.

Tampa, Fla.—Board of Public Works has provided for continuation of paving on North Blvd. to West Tampa line, where that municipality will carry it on to Main st., West Tampa, making another route to West Tampa. Also, it was provided that grades to approaches of Lafayette st. bridge be filled in at once.

Calhoun, Ga.—Special election has been set for September 13, when voters of Gordon County will decide whether or not this county shall issue \$150,000 in bonds for purpose of improving public roads.

Chicago, Ill.—Repairs to strip of 2 1/2 miles of roadway in Milwaukee ave. have been recommended.

Chicago, Ill.—Widening of Halsted st., from West Chicago ave. to West Twelfth st. is being urged.

E. St. Louis, Ill.—Board of Local Improvements has accepted report of City Engineer on probable cost of improvement of Eleventh st. from Baugh ave. to Lake ave., which is \$30,310. Also Fifteenth st., from Summit ave. to St. Clair ave.; estimated cost \$3,414.

Springfield, Ill.—Government court, alleyway extending from Sixth to Seventh sts., between Capitol ave. and Monroe st., will be divided and made thoroughfare.

Evansville, Ind.—City National Bank, of this city, was successful bidder for \$35,000 worth of road bonds. Bonds were issued for construction of gravel roads in Knight Township.

Indianapolis, Ind.—Resolutions have been confirmed for improvement of Olney st., Irvington ave., Capitol ave., Wyoming ave., State ave., Eastern ave.

Mishawaka, Ind.—Board of Public Works has passed resolution to pave East Second st., from point where pavement now ends to Byrkit's curve.

Lexington, Ky.—Ordinance has been adopted authorizing Mayor to issue and sell Maxwell Street Improvement Bonds in sum of \$31,657.67, also Oldham Avenue Improvement Bonds in sum of \$1,196.66.

Lexington, Ky.—Ordinances have been passed authorizing improvement of various streets.

Mt. Vernon, Ky.—Election has been called for Oct. 23 to take vote on proposition of \$100,000 bond issue for purpose of building turnpikes in county.

Rising Sun, Md.—Preparations are being made to macadamize the four-mile Rising Sun New Bridge public road.

Haverhill, Mass.—Bond issue of \$2,000 has been authorized for sidewalk construction.

Haverhill, Mass.—Plan is being considered for river-front boulevard.

Holyoke, Mass.—City Engineer T. J. McCarthy has started on plans for work of widening Northampton st., from state highway at Taft's castle down as far as River Terrace.

St. Paul, Minn.—Preliminary order has been prepared in office of City Engineer Claussen providing that proposition of opening street from Sibley to Jackson sts., north of levee, be investigated. Proposed street is to be 40 ft. wide.

Gloucester, Miss.—At special election held in Third Supervisors' District, of Mite County, to determine whether or not district should issue \$80,000 bonds to build roads in district, vote was 222 for and 132 against issue.

Laurel, Miss.—Jones County Board of Supervisors will shortly consider bond issues for road improvements.

Jefferson City, Mo.—Missouri has inaugurated system of road building which will ultimately provide for outlay of something like one billion dollars.

Butte, Mont.—Clerk has been instructed to advertise for bids for grading of Emmet st., bids to be submitted Sept. 4.

Butte, Mont.—Resolution has been introduced for extending and widening of Alabama st. from Silver st. to south line of Barnard placer claim. Resolution providing for grading of Harrison ave. and tributary streets has been read for second time and Sept. 4 was fixed as time for hearing objections.

Atlantic City, N. J.—Pavement of New Jersey ave. from ocean to wharves of Atlantic City Transportation Company, at northern end of avenue are being discussed by Commission. Arctic ave. is also to be paved its entire length, and Ventnor ave., between Boston and Jackson aves., is also to be improved. Upwards of \$200,000 will be required for these contemplated improvements.

Kenilworth, N. J.—Plans are being made for macadamizing of Boulevard from Twentieth st. to Rahway Valley Railroad station. Highway committee has been authorized to make application to Board of Freeholders for four new culverts.

Newark, N. J.—All bids for work of resurfacing Bloomfield ave., Vernon, have been rejected by Board of Freeholders' committee.

Paterson, N. J.—Board of Public Works has ordered construction of sidewalks on numerous streets.

Newburgh, N. Y.—City Council has confirmed the sale of \$13,500 improvement bonds for paving of Montgomery st. to Harris, Forbes & Co., of New York city.

Schenectady, N. Y.—Large number of ordinances have been adopted authorizing pavement of different streets in city. They provided for improvements in following streets: Cedar st. from Broadway to Cherry st.; Waverly pl. from Rugby rd. to the Plaza; Foster ave. from the end of the pavement to Florence st.; Clarendon st., Manhattan st., Helderberg ave. and Osterlitz ave.

Utica, N. Y.—Improvement of Marcy ave. is recommended.

White Plains, N. Y.—Plans have been prepared for construction of several hundred miles of new roads. The most important of these is reconstruction of Boston Post Road for distance of 7.36 divided as follows: Larchmont Village, .95; New Rochelle and Mamaroneck, .73; Rye Village 2.85; Pelham and New Rochelle, .20; Pelham Manor Village, 1.34; Mamaroneck Village, 1.29. In addition to contracts for rebuilding Boston Post Road through Westchester County, there are many other main highways to be improved in central and western sections of county, including part of the Albany Post Road, making total of 19.40 miles apportioned as follows: White Plains-Rye, 1.64; Bronxville Village, .95; Mt. Vernon City, Columbus ave., .28; Yonkers City, Central Park ave., 6.48; East View-Briarcliff Manor, 5.04; Briarcliff Manor Village, .33; Tuckahoe Village, .25; Peekskill Village, 2.27; Ossining-Croton River, 1.66; Tuckahoe-White Plains, 2.43; White Plains Village, 2.02. Stretch of road between Bay Shore and Brookhaven, on Long Island, distance of 12.92 miles, is to be improved, as is also Smithtown-Port Jefferson road, with mileage of 11.59.

Canton, O.—The North Industry-Hoewestine rd. will be paved for three-quarters of a mile between North Industry and macadam roadway built by State. Commissioners will receive bids for improvement on Sept. 19, at 10 o'clock.

Hamilton, O.—Resolution has been passed instructing City Solicitor to prepare necessary legislation for issuing of \$25,000 of bonds to pay city's portion of street improvements along streets designated.

Springfield, O.—Plans for paving East Main st. from Lagonda ave. to corporation line, with viaduct under Big Four crossing, have been discussed by Street Committee of Council. Committee decided to recommend to Council that City

Engineer be instructed to prepare plans and estimate for work, including the construction of viaduct. Committee also decided to recommend paving of North Limestone st. from McCreight ave. to corporation line, and South Center st.

Toledo, O.—Bonds in sum of \$166,368.58 for Lucas County road improvements have been sold.

Urbana, O.—Commissioners have decided to make one mile of improvements on Springfield pike and Urbana and Mechanicsburg pike. County Engineer has been instructed to prepare plans and specifications for roads.

Oklahoma City, Okla.—Resolution has been passed for paving portion of Central ave.

Eugene, Ore.—Blair st. will be paved at once.

Erie, Pa.—Ordinances have been passed authorizing paving and improving of various streets.

Meadville, Pa.—Ordinance calling for issuing of \$69,000 worth of bonds for paving of North and South Main, North and South Mercer, Clarksville, North High Streets and College ave., has been adopted.

Reading, Pa.—Bill has been introduced into Common Council for increasing indebtedness of city to extent of \$100,000 for purpose of paving streets with macadam, brick, asphalt and other material.

Seranton, Pa.—Immediate action is to be taken by County Commissioners on county road problem, and in all probability work of finishing up road jobs in Blakely, Dickson and Taylor boroughs will be given to either MacDonald Construction Company or Gaynor Construction Company.

Shamokin, Pa.—Old State road between Shamokin and Paxinos will be resurfaced.

Upper Darby, Pa.—Ordinance has been passed authorizing loan of \$125,000 for macadamizing of roads and installation of sewerage system.

Denison, Tex.—Paving of Merick ave. from Main st. south to south line of Murray st. is being considered.

Corpus Christi, Tex.—It is reported that the committee will recommend that all bids on paving that were submitted on Aug. 9 be rejected, and that city readvertise for bids. This will be made on grounds that there is wide discrepancy in several of bids, as compared with prices offered in other Texas municipalities.

El Paso, Tex.—More new paving has been petitioned for.

Mexia, Tex.—The Attorney General has approved issue of \$150,000 good road bonds for good roads District No. 4, which includes Mexia and bonds have been placed in Controller's office for registry.

Orange, Texas.—At meeting of the City Council petition by 150 voters, asking for election to permit people to vote on question of issuing \$20,000 more street improvement bonds was presented. Council will call election and set the date.

Sulphur Springs, Tex.—Bond issue of \$300,000 for good roads is being discussed. Election is recommended.

Taylor, Tex.—Bids will shortly be received for paving of nine blocks of business streets about 18,000 sq. yds. Bids will be received on vitrified brick, bitulithic and creosoted pine block pavements; estimated cost, \$75,000.

Salt Lake City, Utah.—With the understanding that no endeavor will be made this year to pave northeast bench, it was agreed by City Commission after lengthy discussion to readvertise for paving of district No. 82 with Utah rock asphalt.

Danville, Va.—On September 3 bond election will be held at Chatham for issuance of \$100,000 worth of county road improvement bonds, and present indications are that election will be successful one. These improvements are to be made in the Dan River district of Pittsylvania County, and if election is voted, about fifty miles of road in this district will be resurfaced and rendered more passable than they are at present.

Norfolk, Va.—Ordinance has been signed appropriating \$36,000, of which \$23,000 is for paving of Church st. with Belgian block.

Portsmouth, Va.—Sum of \$75,000 has been authorized to extend Dinwiddie st. southward to Fifth, and \$6,946.42 to pave Chestnut st. from south side of Glasgow to south side of South.

Wheeling, W. Va.—The Ohio County Commissioners have entered into good roads movement. \$124,000 has been appropriated for good roads for next year.

Ellensburg, Wash.—Third street, from Ruby to east city limits; Sampson, from Second to Third, and Second st., from Sampson to the east city limits,

will be graded and paved with asphalt and ready for traffic within two and a half months. City Council has amended contracts for paving of above-mentioned streets to Independent Asphalt Paving Co., same firm that has assumed contract of International Contract Co. for completion of the municipal water system. But two bids were received on Second st. paving. The Independent people bid \$20,202 and other bid was \$20,615.40.

Everett, Wash.—Thirty blocks of streets will be permanently improved by the laying of sidewalks.

Everett, Wash.—Petition has been received from taxpayers asking for improvement of Twenty-first st. from Rucker to Hoyt aves., improvement to be 27-ft. asphalt street surface with cement sidewalks.

Seattle, Wash.—City Council has ordered improvement of various streets.

Spokane, Wash.—Bids received by City Council for big Ash st. paving improvement, Broadway to Northwest boulevard. Most of bids were from \$3,000 to \$10,000 under estimates. The inland Empire Hassam Paving Company, holders of patent on hassam paving, again bid under bitu-mass specifications, under-bidding Spokane Bitu-Mass Company, holders of the patent on bitu-mass. Estimates and proposals follow: Asphalt and brick, estimate \$57,285—Mitchell Brothers, \$54,095; James Kennedy, \$55,940.90; Inland Hassam Paving Co., \$51,952.; C. M. Payne, \$55,900. Spokane Bituminous No. 1, estimate \$58,370—Mitchell Brothers, \$54,019; James Kennedy, \$54,140.90; Inland Empire Hassam Paving Co., \$51,769. Bitu-Mass, estimate \$50,030—Spokane Bitu-Mass Co., \$44,000; Inland Empire Hassam Paving Co., \$43,900. Hassam estimate \$59,855—Inland Empire Hassam Paving Co., \$47,400. Bitulithic, estimate \$68,325—Inland Empire Hassam Paving Co., \$64,225. Following bids were also opened today by Council: Improving D st., grading, etc., estimate \$2,050, to run from S. P. & S. substitute street to F st., C. M. Payne, \$2,340; Mitchell Brothers, \$1,866; improving Twenty-third ave., grading, etc., estimate \$2,400, to run from Park drive to Bernard st.; one bid; J. B. Mitchell, \$2,267.

Racine, Wis.—Paving of Spring st. is being discussed.

CONTRACTS AWARDED.

Greenville, Ala.—By Butler County Commissioners at \$17,000 to Andrew E. Perry, of Montgomery, Ala., to resurface 12 miles of State road with sand-clay.

Mayfield, Cal.—For paving of Lincoln st. to Joseph Burkett, well-known contractor. Bid was for sum of \$3.79 per running ft., or total of \$6,822.

San Jose, Cal.—For paving of San Carlos, Park ave. and San Antonio sts. bids were received and opened from Barber Asphalt Company, Ransome-Crummey Company and City Improvement Company. Offers were extremely close, varying, for greater part, only in fractions. Successful bidders for work on various streets were as follows: Park ave. — Ransome-Crummey Company. Pavement 1½ cts. per sq. ft.; curb 30 cts. per lin. ft.; gutter per sq. ft., 17 cts.; catch basins, \$40 each; drain pipe, 60 cts. per ft. San Carlos st.—City Street and Improvement Company. Pavement, 18½ cts.; curb, 68 cts.; gutter, 9 cts.; catch basins, \$35; drain pipe, 75 cts. per ft. San Antonio st.—Ransome-Crummey Company. Pavement, 15½ cts.; curb, 30 cts.; gutter, 17 cts.; catch basins, \$40; drain pipe, 60 cts.

Bridgeport, Conn.—To American Creosoting Co. of New York for furnishing of wood blocks for pavement on Fairfield ave. and Elm st. Contract is for 15,000 sq. yds. of wood blocks preserved to specification subject to inspection of representative of city.

Waterbury, Conn.—Bids have been received for bitulithic, granite and vitrified paving on North Elm and Brown sts. Warren Bros., of Boston, were only bidders on bitulithic work, their bid being \$13,912.87. Connecticut Hassam Paving Co. of New Haven was lowest bidder on granite and vitrified brick paving, its bid being \$17,353.29 and \$15,533.08 respectively.

Ocala, Fla.—By City to Alabama Paving Co. for paving Fort King ave. with vitrified brick; 12,000 sq. yds. at \$1.67.

Moultrie, Ga.—By County Commissioners to J. E. Newberry, of Moultrie, at \$10,640, to construct road to county line.

South Bend, Ind.—For improving of Edwardsburg rd. by County Commissioners to H. W. Reed & Sons for \$8,495. Road will be improved with grade, gravel and macadam.

McPherson, Kan.—For paving portions of Kansas ave. & Main st. to Thogmartin & Gardiner, Ft. Scott, Kansas, at \$42,784. H. A. Rowland, City Engineer.

Lexington, Ky.—By city for improvement of Main st. to Carey-Reed Company at following prices: Asphalt pavement, type A, \$1.30 per sq. yd.; header stone, 50 cts. per lin. ft.; concrete, \$4.80 per cu. yd.; combined cement curb and gutter, 55 cts. per lin. ft.; cement gutters, \$1.25 per sq. yd.; cement curb, 80 cts. per lin. ft.; resetting manhole tops, \$2.50 each; five-inch pipes, 40 cts. per lin. ft. For improvement of Mill st., from High st. to Cedar st., as follows: Asphalt pavement, type T, Trinidad Pitch Lake Asphalt, \$1.30 per sq. yd.; header stone, 50 cts. per lin. ft.; concrete, \$4.80 per cu. yd.; limestone curb, 60 cts. per lin. ft.; cement gutters, \$1.25 per sq. yd.; resetting old curb, 15 cts. per lin. ft.; cement curb, 90 cts. per lin. ft.; resetting manhole tops, \$2.50 each; manholes, new, \$30 each; catch basins, new, \$40 each; flush tanks, \$50 each; 5-in. pipes, 40 cts. per lin. ft.; 8-in. pipes, 60 cts. per lin. ft.; 10-in. pipes, 70 cts. per lin. ft.; 15-in. pipes, 90 cts. per lin. ft.; 18-in. pipes, \$1 per lin. ft.; 24-in. pipes, \$1.75 per lin. ft., and for improvement of Mill st., from Water to Vine st., as follows: Asphalt pavement, type A, \$1.40 per sq. yd.; header stone, 60 cts. per lin. ft.; concrete, \$5 per cu. yd.; granite curb, \$1.10 per lin. ft.; brick gutters, \$1.60 per sq. yd.

Baltimore, Md.—To "Bob" Padgett's paving concern—the F. E. Schneider Company—by Board of Awards, on recommendation of Commissioners for Opening Streets, for paving of Orem ave., Parkwood and Woodbrook aves., in Northwest Baltimore, at his bid, \$11,845.50. Patrick Flannigan was second lowest bidder at \$12,009.50, while United States Asphalt and Refining Company's bid was \$12,580.

Baltimore, Md.—By Paving Commission as follows: No. 34, to Cunningham Paving & Construction Co., \$48,758.60, Exeter st. from Baltimore to Lombard; Exeter st. from Fayette to Low; Exeter st. from Gay to Front; Monument st. from Fallsway to Ensor; granite block, No. 35, to Patrick Reddington, 321 St. Paul st., at \$12,086.75, Colvin st. from Gay to Front; Buren st. from Madison to Truxton; Truxton st. from Buren to Warden, and Warden st. from Truxton to Eager; vitrified block, No. 36, to Cunningham Paving & Construction Co., at \$20,084.50, Front st. from Hillen to High; Front st. from Exeter to Forrest, and High st. from Hillen to Front; granite blocks. Cement footway around School No. 70, William st., to John S. O'Dell, 913 Light st., 8½¢ per sq. ft.

Duluth, Minn.—For paving of East Third st., between 14th and 18th aves., the General Contracting Co. was low on bitulithic paving, with \$15,376.50; P. McDonnell was low on sheet asphalt, with \$13,522.40, and also on bituminous concrete, with \$12,561.40. George R. King was low on plain macadam, with \$12,317.50.

Okolona, Miss.—By Commissioners Third District, Chicaw County, to Cresap Bros. for construction of recently noted graded and gravel roads; about 10 miles. H. P. Farrar is Engineer.

Poplar Bluff, Mo.—By city to Roy Williams, Cairo, Ill., to pave all downtown streets at \$86,645.24.

Hackensack, N. J.—By Bergen County Board of Freeholders for two contracts to E. C. Humphrey, of Hackensack, both for work on Fort Lee turnpike, one for \$47,530.60 for one mile and other for \$23,715 for 3,080 ft.

Kenilworth, N. J.—For macadamizing of Twentieth and Twenty-first sts. and Washington ave. to Bobus Brothers, of Plainfield by Borough Council. Other bidders were Fred. Smith, of Morristown; the Weldon Contracting Company, of Rahway, and Bamberger & Chapman of Orange.

Perth Amboy, N. J.—For grading Johnstone st. from Hall ave. to Meredith st. to Graham & McKeon at 42 cts. per cu. yd.

Roselle Park, N. J.—Bids for paving of Chestnut st. have been opened by Borough Council. The bidders were Standard Bitulithic Co., of Newark; Fred S. Smith, of Morristown; C. H. Winans & Co., of Linden, and Bamberger & Chapman, of New York City. Lowest bid of Standard Bitulithic Co. was \$37,565, and highest was \$40,742.61. Lowest bid of Fred S. Smith was \$32,812.31, and highest \$46,175.99. Other bids were \$42,406.52, \$34,081.80, \$38,952.25, and \$35,-

182.78. C. H. Winans & Co. had but two bids, their prices being \$31,318.80 and \$32,913.40. Minimum bid of Bamberger & Chapman was \$33,198.92, and maximum \$45,002.36. Other bids were \$41,651.72, \$35,271.90, \$39,698.62, and \$36,347.98.

Brooklyn, N. Y.—Lowest bidder on job of regulating, grading, curbing, flagging and paving with improved granite block on concrete foundation, Covert ave., Ridgewood, from DeKalb ave. to Putnam, and from Cornelia st. to Myrtle ave., was Cannon Engineering Company, at \$96,570.

Mamaroneck, N. Y.—By Board of Trustees for paving Halstead ave., with brick to Joseph Dimando at \$65,457.50.

Niagara Falls, N. Y.—To Spire and Prior of this city for bitulithic pavement in Willow ave. from Main to Whirlpool st., by Board of Public Works. Their bid was low for this material. Estimate for job was \$10,000.

Rochester, N. Y.—Board of Contract and Supply has approved transfer of contract for asphalt pavement in West ave. from Thomas Holahan to Whitmore, Rauber & Vicinus.

Rome, N. Y.—By Board of Public Works for paving Kossuth, Huntington and Steuben sts. and section of Elm st., to Warren Bros. Co., for their bitulithic pavement.

Syracuse, N. Y.—Among proposals received by Board of Contract and Supply were those for resurfacing James st., from North Salina st. to east line of J. M. Wieting property, distance of over a mile. It is largest resurfacing contract to be awarded this year. Lowest bid was \$33,916.90 for uniform asphalt pavement, submitted by Warner-Quinlan Asphalt Company. Lowest for different materials on sides of the street and railway strip was \$36,348.40 by same company for asphalt and brick. Proposals for using brick or block and sandstone throughout were much higher, because of fact that street is now paved with asphalt except at sides on steep grades and to use brick or block would virtually mean new pavement. Proposals were also received for paving Tennyson ave. and for number of sidewalk contracts. Bids for resurfacing James st. are as follows: Uniform pavement with stone curb—Warner-Quinlan Asphalt Company, sandstone block, \$90,040.40; vitrified block, \$58,488.90; asphalt, \$33,916.90; Guy B. Dickinson, sandstone block, \$91,123.50; vitrified block, \$6,916.90; asphalt, \$36,487.50. Asphalt pavement with other materials on the railway strip—Warner-Quinlan Asphalt Company, asphalt and sandstone block, \$45,504.90; asphalt and vitrified brick, \$36,348.40; Guy B. Dickinson, asphalt and sandstone block, \$48,628.50; asphalt and vitrified brick, \$38,428. Special combination, including 4,200 sq. yds. of new sandstone block pavement, resurfacing with sandstone block 510 sq. yds. of sandstone pavement, 3,670 sq. yds. of extra work in the railway strip and resurfacing of 19,690 sq. yds. of asphalt pavement—Warner-Quinlan Asphalt Company, \$46,442.40; G. B. Dickinson, \$49,502.50. Proposals for paving Tennyson ave., from South Wilbur ave. to Milton ave. were received as follows: Uniform pavement and stone curb—F. J. Baker, sandstone block, \$22,489.50; vitrified block, \$17,358.90; asphalt, \$15,950.50; G. B. Dickinson, sandstone block, \$23,148; vitrified block, \$17,866.50; asphalt, \$16,357.70; Warner-Quinlan Asphalt Company, sandstone block, \$23,354.50; vitrified block, \$17,821.50; asphalt, \$16,413.10; Frank S. Sposato, sandstone block, \$22,037.50; vitrified brick or stone block, \$16,001.50. C. T. Hookway Construction Company, sandstone block, \$20,434.50; vitrified brick or block, \$15,556; macadam, bituminous filler, \$15,656. Same pavement, uniform pavement with combination curb—F. S. Sposato, \$20,488.50; vitrified brick or block, \$14,908.50; C. T. Hookway Construction Company, sandstone block, \$19,067.50; vitrified brick or block, \$14,650; macadam, bituminous filler, \$14,650. Same pavement, stone curb, different materials at the sides of the street and the railway strip—F. J. Baker, asphalt and sandstone block, \$18,225.50; asphalt and vitrified brick, \$16,446.50. G. B. Dickinson, asphalt and sandstone block, \$18,720; asphalt and vitrified brick, \$16,882.50. Warner-Quinlan Asphalt Company, asphalt and sandstone block, \$18,828.10; asphalt and vitrified brick, \$16,903.10.

Syracuse, N. Y.—Eleven paving and resurfacing contracts, amounting to total of nearly \$110,000, have been awarded by Board of Contract and Supply. With one exception, eleven contracts are for asphalt, four being for resurfacing present asphalt paved streets. Except-

tion is a new pavement in North Crouse ave., from Canal st. to Burnet ave., which is to be paved with vitrified block. Most important of the improvements are in Oneida, South Clinton, East Onondaga and Park sts. Contracts were awarded to the lowest bidder for materials designated, and were let as follows: To the Warner-Quinlan Asphalt Company—resurfacing Montgomery st., from East Genesee to East Jefferson, \$5,018.60; resurfacing East Onondaga st., from South Salina to South State, \$14,945; paving South Clinton st., from Temple to Tallman, \$14,363.90; resurfacing North State st., from the Erie canal to James st., \$4,282.50; resurfacing South Salina st., from Brighton ave. to Newell st., \$6,330.75. To Guy B. Dickinson—paving Sackett st., from Park ave. to West Genesee st., \$3,061.50; paving Park st., from Court to Pond, \$19,255.85. Fred. J. Baker—paving Oneida st., from West Adams to Tallman, \$29,579; paving North Crouse ave., from Canal st. to Burnet ave., \$3,375.50; paving East Borden ave., from South Salina st. to South State, \$3,895; paving Carbon st., from Danforth to Court, \$3,087. One of big paving proceedings under way is that of Emerson ave., from Harbor st. to Chemung st., Chemung st. from Emerson ave. to Milton ave., from Chemung st. to city line. When completed it will make continuous paved driveway from center of city to west line of Solvay village. Bids have been received as follows: For asphalt and sandstone block on the railway strip and grades of over 4 per cent. G. B. Dickinson, \$46,326.60; F. J. Baker, \$47,466.20; Warner-Quinlan Asphalt Company, \$47,558.50. Vitrified brick with sandstone on the railway strip and grades of over 4 per cent. G. B. Dickinson, \$48,297; F. J. Baker, \$50,320; Warner-Quinlan Asphalt Company, \$50,852.50; C. T. Hookway Construction Company, \$45,600.50. Sandstone throughout. C. T. Hookway Construction Company, \$63,902 and \$47,301 for vitrified brick. Asphalt and sandstone on railway strip, G. B. Dickinson, \$46,558; F. J. Baker, \$46,685; Warner-Quinlan Asphalt Company, \$46,690.50. Asphalt with stone curbing and brick on the railway strip, G. B. Dickinson, \$42,558; F. J. Baker, \$43,685; Warner-Quinlan Asphalt Company, \$43,090.50. Sandstone block with curbing, G. B. Dickinson, \$59,826; F. J. Baker, \$61,301; C. T. Hookway, \$56,031.50; Warner-Quinlan Asphalt Company, \$62,930.50. vitrified brick throughout with stone curbing, G. B. Dickinson, \$44,646; F. J. Baker, \$46,701; C. T. Hookway, \$41,861; Warner-Quinlan Asphalt Company, \$46,570.50. Asphalt throughout with stone curbing, G. B. Dickinson, \$41,418; F. J. Baker, \$42,605; Warner-Quinlan Asphalt Company, \$41,740.50.

Charlotte, N. C.—By city to W. S. Stancil, Charlotte, at \$2,953.53 for cement work on East Trade and 4th sts., and South Davidson and Jackson terraces.

Denton, N. C.—To C. M. Lane & Co., High Point, N. C., to build road from Denton to High Rock at \$100,000.

Columbus, O.—By State Highway Department for grading and paving with concrete the Ghent road, State Highway "E" Pet. No. 409 in Copley and Bath townships. Length, 1,246.2 ft. or 2.38 mile, to O'Brien & Stringer, Akron, O., at \$8,350. For grading and paving with waterbound macadam, having bituminous surface treatment, Sec. No. 2 the Port Clinton rd., State Highway "A" Pet. No. 255, in Rice Township. Length, 11,500 ft. or 2.18 mile, to Croghan Construction Co., Fremont, O., at \$22,900. For grading and paving with waterbound macadam, the Allensville Extension rd., State Highway "C" Pet. No. 418, in Richland Township. Length, 11,614.7 ft., or 2.10 mile, to E. C. Wortman, Hamden, O., at \$12,299. For grading and paving with waterbound macadam, the Sec. No. 1 Urbana and Mechanicsburg rd., State Highway "C" Pet. No. 533, in Goshen Township. Length, 3,248 ft., or 0.62 mile, to Samuel W. Wrightse, Logan, O., at \$5,139.54. For grading and paving with waterbound macadam, the Monroeville and Bloomington rd., State Highway "B" Pet. No. 628, in Oxford Township. Length, 5,500 ft. or 1.04 mile, to Ed. F. Hoffman, Castalia, O., at \$4,195. For grading and paving with waterbound macadam Sec. No. 2, Ellsworth Center, Easterly rd., State Highway "G" Pet. No. 341, in Ellsworth Township. Length, 6,802.5 ft., or 1.29 mile, to C. W. Harshman, Mineral Ridge, O., at \$12,604.

Akron, O.—For paving of several streets by Service Director Pillmore. Streets to be paved are Annadale ave., Augusta ave., Princeton st., Harvard st. and Yale st. Contracts were let as fol-

lows: Annadale ave. to Windsor Brothers, \$12,520.56. Other bidders, Thomas E. McShaffrey and O'Brien & Stringer; Augusta ave. to Thomas E. McShaffrey, \$3,647.57. Other bidders, Windsor Brothers and Watters & Russell, Princeton st. to Windsor Brothers, \$14,579.08. Other bidders, J. J. Mahoney, Wildes & Davidson, Downes & Groner and O'Brien & Stringer, Harvard st. to Windsor Brothers, \$19,284.80. Other bidders, O'Brien & Stringer, Thomas E. McShaffrey and J. J. Mahoney. Yale st. to Windsor Brothers, \$13,167.05. Other bidders, O'Brien & Stringer, Watters & Russell, Wildes & Davidson and J. J. Mahoney.

Dayton, O.—For paving improvements as follows: A. Wroe & Son, \$600, paving first alley north of Edgewood ave.; A. J. Kammer, \$800, paving alley north of Cottage Grove ave. and alley east of Salem ave.; William J. Kernan & Co., \$1,300, for the paving of Hollencamp ave.; The J. E. Conley Co., \$1,000, for the paving of Magnolia st.; The J. E. Conley Co., \$6,150, for the paving of a portion of Wayne ave.; The J. E. Conley Co., \$2,300, for the paving of Mead st.; David Beard, \$5,200, for the paving of June st., between Fifth and Second sts.

Massillon, O.—By Board of Control for grading Bell st., to Diefenbacher & Sons, and John J. Geis received the contract to grade West Walnut st. Bids received for contract to grade George and Kent sts. were above City Engineer's estimate and contracts were not awarded.

Oak Harbor, O.—For paving of East Main st. The Modern Construction Co., of Fremont, with a bid of \$9,029.40, was low. John E. King, of Tiffin, bid \$9,540.03, and Harmon Gens, of Oak Harbor, \$9,661.60. This street is to be paved with brick, with concrete base.

Falls City, Ore.—To Ira Mehrling for grading part of North Main st., at 35c. a cu. yd. Work will cost about \$520.

Sutherlin, Ore.—To Hillard & McGinnis, of Portland, for street paving for this city, the bid being \$26,423.95. The paving will include three blocks on Central ave., running from Southern Pacific right of way eastward, two blocks on Calapoolia drive, and two blocks on State st.

Providence, R. I.—To Franklin Construction Co. for paving on Atwell's ave., Brook st. and Governor st. yesterday by Board of Contract and Supply. Work includes laying of 9,562 sq. yds. of wooden block paving on Atwell's ave., 7,322 sq. yds. on Brook st., and 3,280 sq. yds. on Governor st., in addition to 3,325 sq. yds. of granite block pavement on Brook st., and 1,055 sq. yds. on Governor st. Bids were as follows: Atwell ave., Franklin Construction Co., \$35,384.56; United States Wood Paving Co., \$36,048.88; Barber Asphalt Paving Co., \$41,651.91; Brook st., Franklin Construction Co., \$31,543.06; United States Wood Paving Co., \$32,074.16; Barber Asphalt Paving Co., \$37,542.26; Governor st., Franklin Construction Co., \$13,677.90; United States Wood Paving Co., \$13,818.67; Barber Asphalt Paving Co., \$16,238.17.

Sioux Falls, S. D.—Bids for construction of cement concrete sidewalks on various streets have been received as follows: J. A. Ward, sidewalk, 10 4-10 cts. per sq. ft.; cut and fill, 25 cts. per cu. yd.; J. M. O'Neill, sidewalk, 10½ cts. per sq. ft.; cut and fill, 30 cts. per cu. yd.; Odney Bros. & Stadium, sidewalk, 10 7-10 cts. per sq. ft.; cut and fill, 30 cts. per cu. yd. Contract for constructing cement concrete sidewalks on various streets was awarded to J. A. Ward.

Fort Worth, Tex.—By City Commission for paving of Terrell ave., from South Main to Hemphill to Roach & Manigan, material being Bermudez bituminous concrete at \$1.75 a yd.

Fort Worth, Tex.—For paving Calhoun st. from Ninth st. to East Front st. to Tarrant Construction Co.; also to Roach & Manigan Co. for paving of Bluff st. from Commerce to Pecan. F. A. Johnston was awarded contract for construction of Twenty-first st. culvert. The contract price is \$3,077.55.

Park City, Utah.—By City Council for paving to L. R. Walker of Salt Lake, whose bid was \$9,000 or \$1,575 below other contestants.

Norfolk, Va.—To Perry & Co., Inc., for laying sidewalks for Ballentine Realty Corporation, work to begin immediately. Walks will be of granolithic material and will cost \$3,500.

Wheeling, W. Va.—County Commissioners have opened bids for paving of various roads in county. Stringer & Stringer received contract for paving National Road east of Elm Grove, as well as road in Steenrod and Mt. de Chantal. Contractor George Lemmon got contract for paving National road from Stackyard Hollow to Rudler's place,

Bethany pike and in Ritchie's district. Contract for furnishing brick was divided between Suburban Brick Company and Standard Brick Company.

SEWERAGE

Pasadena, Cal.—As result of about two months' field work on part of engineers of outfall sewer, definite line for system has been completed, with exception of half mile on two of branches which include Pasadena, South Pasadena, Alhambra and San Gabriel on west, and Azusa, Monrovia and Duarte on east.

Santa Monica, Cal.—Appropriation of \$20,000 has been authorized for installation of modern sewerage plant at Soldiers' Home.

San Juan, Cal.—Plans and specifications of City Engineer for sewer work in section A of First Ward have been adopted and clerk was instructed to advertise for bids to be opened two weeks hence.

Tampa, Fla.—Board has received maps of comprehensive drainage scheme for that section west of city from Gray st. south and from Howard ave. east to Boulevard, cost of project being placed at about \$65,000. It will in all likelihood be put through within short period.

Macon, Ga.—For purpose of securing funds for further carrying out extension work of Macon water works system, Water Commissioners sold \$40,000 worth of 4½ per cent. bonds to Hillsman & Co., Atlanta bankers.

Indianapolis, Ind.—Resolution has been adopted for construction of main sewer in Keating ave., from tenth to first alley north.

Mishawaka, Ind.—Resolution No. 36, calling for sewer on East Second st. from Mason to Home sts., has been passed, also resolution No. 38, calling for sewer from Cedar and Joseph sts. to point 112 ft. south of south line of Grove, and on Cedar from Joseph to Elkhart and Western tracks.

Fort Scott, Kan.—Resolution has been adopted for construction of storm sewer in various streets of city.

Lexington, Ky.—Resolution has been adopted for construction of sanitary sewer on Third st., from Upper st. to Limestone st.

Boston, Mass.—Commissioner Rourke of Public Works Department has called upon Mayor Fitzgerald to provide \$393,507 additional for sewerage work, which Commissioner claims should be done at earliest possible moment, and Mayor has referred matter to City Council for consideration.

Franklin, Mass.—The water and sewer commissioners have engaged John J. Van Valkenburg of South Framingham to engineer new sewer system voted for at last annual town meeting. Plans now are awaiting approval of state board of health.

Haverhill, Mass.—Bond issue of \$2,000 has been authorized for sewer construction.

Malden, Mass.—Under suspension of rules it was voted to borrow \$5,000 for extension of sewerage system in Maplewood district.

Butte, Mont.—Resolution introduced by Alderman Nerny, providing for construction of sanitary sewer on West Gold st. in Montrose addition west to Bryn Mawr, has been read for second time and Sept. 4 was fixed as time for hearing objections.

Butte, Mont.—Clerk has been directed to advertise for bids for construction of Dublin gulch sewer, bids to be submitted on Sept. 4.

Caldwell, N. J.—Bids will be received by Council of Borough of Caldwell, New Jersey, until September 3, 1912, at 8 o'clock p. m., at Borough Council rooms, for the purchase of \$20,000 of sewer bonds. John J. Van Order, Borough Clk.

Cranford, N. J.—Repairs to sewer system are being considered.

Vernon, N. J.—Sewer system is under consideration.

Newburgh, N. Y.—Construction of sewer in First st. from Fullerton ave. to West st. is recommended.

Poughkeepsie, N. Y.—Sewer has been ordered constructed on Lexington ave. to run distance of 250 ft. from South Cherry st.

Hamilton, O.—City Auditor Grimmer will award \$25,000 worth of sewer bonds to Atlas National Bank of Cincinnati.

Urbana, O.—Plans have been made by City Engineer Cary H. Pratt and Consulting Engineer A. E. Kimberley, of Columbus, for sewerage system to be installed.

Altoona, Pa.—Contracts for sanitary sewers will shortly be awarded by Board of Public Works.

Collingsdale, Pa.—Ordinance has been adopted authorizing loan of \$40,000 for sewer system.

Erie, Pa.—Ordinances have been passed providing for sewers in various streets.

Upper Darby, Pa.—In Upper Darby ordinance has been passed authorizing loan of \$125,000 for installation and construction of sewerage system in that district, covering that part of Upper Darby Township tributary to Naylor's Run and Cobb's Creek Valley, and also for macadamizing of roads and general repair of the same.

Sioux Falls, S. D.—Resolution declaring it necessary that lateral sewers be constructed in district No. 4 of city of Sioux Falls, has been adopted; also lateral sewers in district No. 3, and in district No. 5.

Bartlett, Tex.—All arrangements have been made to begin work on sewer system as soon as all bids are in, which will be Sept. 1.

Corpus Christi, Tex.—Ordinance has been adopted authorizing sale of \$14,000 sewer bonds, money to go for extension work.

Temple, Tex.—Additional sewerage and water works improvements will shortly be made.

North Warwood, W. Va.—North Warwood is assured complete sewerage system in very near future. People of Greater Warwood declared this at special election held to vote on \$12,000 bond issue to carry out work.

Wheeling, W. Va.—City Council is discussing raising of additional funds for completion of new sewer system.

Milwaukee, Wis.—Mayor Bading has outlined his plan of septic sewers for solving of Milwaukee's sewerage problem before the Milwaukee Real Estate association and it has been indorsed by Board without dissenting vote.

CONTRACTS AWARDED.

Waterbury, Conn.—Bids for construction of storm water conduits in Branch, Wood and Grant sts., have been received and contract awarded to John F. Keating, whose bid was \$2,730.64. John McLoughlin's bid was \$3,244.47; Henry Spinach Contracting Co., \$3,433, and Antonio Lambo, \$3,100.10.

Wesler, Idaho.—By city to G. A. Fleman, of St. Louis, Mo., for construction of sewers, total amount of contract, \$52,722. Itemized bid as follows: Main outlet sewer, 460 lin. ft. 12-in. pipe laid 15 ft. and over, \$1.15; 460 lin. ft. 18-in. 15 ft. and over, \$1.55; 700 lin. ft. 24-in. 8-15 ft., \$2.55; 1,500 lin. ft. 24-in. 15-22 ft., \$2.75; 15 manholes, each \$50; outlet manhole (lump sum) \$300; railroad crossing (lump sum), \$400; 300 lin. ft. lead pipe, 30c.; 500 lin. ft. deep cut, house connections, \$1; total, \$9,192. Sewer Dist. 2—900 lin. ft. 6-in. pipe laid 8 ft. deep, 49 cts.; 900 lin. ft. 6-in. 8-15 ft., 1.100 lin. ft. 8-in. 8 ft., 56 cts.; 3,460 lin. ft. 8-in. 8-15 ft., 80 cts.; 400 lin. ft. 10-in. 8 ft., 64 cts.; 860 lin. ft. 10-in. 8-15 ft., 89 cts.; 1,300 lin. ft. 12-in. 8-15 ft., \$1; 20 manholes, each \$50; 4 combined manholes and flush tanks, each \$75; 6 lamp holes, each \$5; 300 lin. ft. lead pipe, 30 cts.; total \$8,232. Sewer Dist. 3—6,500 lin. ft. 8-in. pipe laid 8 ft. deep, 56 cts.; 7,850 lin. ft. 8-in. 8-15 ft., 80 cts.; 1,100 lin. ft. 8-in. 15 ft. and over, 96 cts.; 1,700 lin. ft. 10-in. 15 ft. and over, \$1.05; 1,200 lin. ft. 12-in. 8-ft., 85 cts.; 900 lin. ft. 15-in. 8 ft., \$1.13; 2,300 lin. ft. 15-in. 8-15 ft., \$1.28; 45 manholes, each \$50; 9 combined manholes and flush tanks, each \$75; pumping station (lump sum), \$1,100; 100 lin. ft. lead pipe, 30 cts.; total, \$21,797. Sewer Dist. 4—1,080 lin. ft. 6-in. pipe laid 8 ft. deep, 49 cts.; 4,600 lin. ft. 8-in. 8 ft., 56 cts.; 4,600 lin. ft. 8-in. 8-15 ft., 80 cts.; 360 lin. ft. 10-in. 8 ft., 64 cts.; 2,500 lin. ft. 10-in. 8-15 ft., 89 cts.; 800 lin. ft. 10-in. 15 ft. and over, \$1.05; 900 lin. ft. 12-in. 15 ft. and over, \$1.15; 35 manholes, each \$50; 7 combined manholes and flush tanks, each \$75; 4 lamp holes, each \$5; 300 lin. ft. lead pipe, 30 cts.; total, \$13,501.

Muncie, Ind.—To Lyons & Delaney for construction of following public improvements at bid in each case of \$1.38 per lin. ft.: for construction of local sewer in Eighth st. from east line of lot 73 in Winton addition to city of Muncie to Perkins ave., to be known as Eighth st. sewer No. 3; for construction of local sewer from lot 72 in Winton's addition to Hoyt ave., known as Eighth st. sewer No. 2. William Birch was awarded contract for construction of local sewer in Elm st. from first alley south of Ninth st. to center of Jefferson st. and Omer ave., at bid of \$1.23½ per lin. ft.

Lexington, Ky.—By City for construction of sanitary sewers on portions of East High st., Kentucky ave., Rand ave. & Merino st., to A. G. McGregor at following bid: 8-inch pipe, 53 cts. per ft.; 5-inch pipe, 35 cts. per ft.; 5-inch Y branches on 8-inch pipe, 55 cts. each; manholes, \$25 each; flush tanks, \$60 each; rock excavation, \$4.50 per cu. yd.; On Rand ave., from Limestone st. to Walnut st., at the following prices: 8-inch pipe, 54 cts. per ft.; 6-inch pipe, 38 cts. per ft.; 5-inch Y branches on 8-inch pipe, 55 cts. each; manholes, \$25 each; flush tanks, \$60 each; rock excavation, \$4 per cu. yd. On Merino st., from Maxwell to High st., at the following prices: 8-inch pipe, 56 cts. per ft.; 5-inch pipe, 39 cts. per ft.; 5-inch Y branches on 8-inch pipe, 50 cts. each; manholes, \$25 each; flush tanks, \$60 each; rock excavation, \$4 per cu. yd. On Kentucky ave., from a point 150 ft. south of Main st. to a manhole in the Central ave. main sewer, at the following prices: 8-inch pipe, 55 cts. per ft.; 5-inch pipe, 39 cts. per ft.; 5-inch Y branches on 8-inch pipe, 55 cts. each; manholes, \$25 each; flush tanks, \$60 each; rock excavation, \$4 per cu. yd.

Duluth, Minn.—Board of Public Works has opened bids for Park Point sewer, and concrete storm sewer at foot of Second ave. west. Hugh Steele was low on the Park Point job, his price being \$22,714, about \$1,000 above engineer's estimate. Proposed sewer will extend from Thirty-eighth st. to canal. Bids of three other contracts ranged from \$37,000 to \$39,000. C. R. McLean was low on storm sewer, his bid being \$507.50.

Newark, N. J.—For construction of Vailsburg drainage system, easterly division, Section I to Wm. J. McCloud & Co., at \$77,980.20. Itemized bid as follows: 1,500 ft. 6 x 9 ft. concrete sewer at \$14.61; 1,240 ft. 6 x 8 ft. concrete sewer, at \$13.45; 1,190 ft. 6 x 7 ft. concrete sewer, at \$14.56; 200 ft. 6 x 6 ft. concrete sewer at \$15.16; 1,480 ft. 5 ft. 6-in. concrete sewer at \$9.31; 1,480 ft. 5 ft. 6-in. concrete pipe at \$10.92; 15 basins with concrete heads at \$90; 28 manholes at \$40; 50 M ft. M. B. M. foundation timber at \$40; 20 cu. yds. extra concrete at \$10; 200 cu. yds. broken stone at \$2.50; 20 C. W. T. extra steel at \$4. Total of other bids as follows: O'Gara & Maguire, \$85,151.90; Charles Ippolito, \$92,317.20; D'Amato & Steffanelli, \$88,699.70. For construction of Vailsburg Drainage System, easterly division section 2, to James A. Christie at \$13,217.95. Itemized bid as follows: 1,920 ft., 45-inch concrete pipe at \$3.86; 1,480 ft. 39-inch concrete pipe at \$3.28; 300 ft. 36-inch concrete pipe at \$3.15; 275 ft. 30-inch concrete pipe at \$2.57; 230 ft. 24-inch vitrified pipe at \$1.82; 700 ft. 8-inch vitrified pipe at \$.82; 25 ft. 8-inch cast-iron pipe at \$.12; 12 basins with iron heads, \$72; 19 basins with concrete heads \$72; 27 manholes at \$38. Totals of other bids received as follows: Charles Ippolito at \$29,369.40; D'Amato & Steffanelli, at \$23,241.35; Fusco Construction Co., \$28,301.15; Wm. J. McCloud & Co., \$25,881.60; Frank Bruno & Co., \$24,976.25. E. S. Rankin, Engineer Dept. Sewers and Drainage.

Perth Amboy, N. J.—For constructing 15-in. sewer in West Side ave., from Neville st. to Hall ave., to Liddle & Pfeiffer at following bid: 18-inch sewer, per lin. ft., \$1.70; 15-inch sewer, per lin. ft., \$1.18; manholes, each, \$25; receiving basins, each, \$75.

Lisbon, O.—By Commissioners for hauling, laying and covering with stone 1-326 ft. of solid cast iron and vitrified sewer pipe on Lisbon and East Liverpool road improvement, to Wright & Morris of Lisbon. Pipe hauled, laid and covered will cost \$713.

Portland, Ore.—For construction of sewers as follows: Canyon Rd., sewer to Hilliard & Marginnis, for \$43,276; Vermont St. trunk sewer to Jeffery & Buff-ton, \$8,765.

Reading, Pa.—By Council to Fehr & O'Rourke for construction of storm and house sewer on Penn st., from Second st. to Canal, at contract price of \$12,733.92.

Providence, R. I.—Bidders on pumping station, which is to be part of Washington Park sewerage system, were: Patrick E. Harding Construction Co., \$985; Gilbane Building Co., \$998; Frederick L. Pierce, \$890, and Frank D. McKendall, \$1,000. Frederick L. Pierce was given contract.

Providence, R. I.—By Board of Contract & Supply for construction of sewers in Washington Park district to Frederick E. Shaw at \$29,034.50; also for sewers in President and Upton aves., at \$2,732.45. Other bidders on sewers in Washington Park were as follows:

Frank A. Gammino, \$42,061.50; Nelson W. Colgrove and David J. Barry, \$42,986.20; Charles Crankshaw, \$36,439.20; E. W. Everson, \$32,516.10.

Dallas, Tex.—The thirty-six inch reinforced concrete sewer to drain water from Cochran st. at point near Dallas brewery is to be built by Estep & Jones, contractors, whose bid of \$550.20 was accepted by Board on recommendation of Commissioner Lee.

Fort Worth, Tex.—By City Commission to F. A. Johnston, Fort Worth, at \$3,077.55 to construct Twenty-first st. culvert.

WATER SUPPLY

Los Angeles, Cal.—Water extensions into Eagle Rock and Annandale districts are being considered.

Pasadena, Cal.—New cast-iron water main will eventually be laid on east side so that that section will be served from north reservoir, has been announced by Water Commissioners. At same time estimates totaling almost \$10,000 of cost of water mains on four streets which are to be improved have been submitted to Board by Engineer Burdett Moody. Mr. Moody's estimates are as follows: For a six-inch cast-iron pipe on Michigan ave., \$3,773.16; for a six-inch cast-iron pipe on Hill ave., \$3,863.34; for a four-inch iron pipe on Markham st., \$567.54; for a four-inch iron pipe on Bradford st., \$1,765.24.

Sacramento, Cal.—Commissioner Wilder has recommended that \$25,000 be provided for new pump at City Water Works. Present capacity of water works is 20,000,000 gallons each day. New pump is intended for reserve purposes.

San Francisco, Cal.—Report prepared by Assistant City Engineer T. W. Ransom on extent and cost of mains needed to supply water to outlying districts of San Francisco has been transmitted by Board of Public Works to Board of Supervisors.

Pittsfield, Me.—Town is considering installation of new water system.

Gloucester, Mass.—At meeting of Water Commissioners it was voted to lay six-inch extension on Shore rd., Magnolia.

New Bedford, Mass.—Town is discussing new water supply.

Saugus, Mass.—Laying of new water mains is being considered.

Uxbridge, Mass.—It has been voted to extend water mains from corner of Depot and Mendon sts.

Brookhaven, Miss.—City Council has sold issue of \$35,000 of water works and electric light refunding bonds of city to Brookhaven Bank and Trust Co.

Vicksburg, Miss.—Bond issue is being considered for purchase of Water Works Company.

Artesia, N. M.—Artesia will have election Sept. 7 to vote on bond issue for \$10,000 at not to exceed 6 per cent. to pay for improvements in water works.

Dover, N. J.—It has been decided that town will own its own pumping plant, which is to be operated by gas-producer plant.

Totowa, N. J.—City is considering installation of municipal water plant.

La Salle, N. Y.—Application of village of La Salle to Public Service Commission for permission to purchase plant of La Salle Water Works Co. has been granted. Village Water Board will begin at once to plan for extensions and alterations necessary and to deal with either municipal plant here or Western New York Water Co., for supply of pure water.

Newburgh, N. Y.—Sale by Mayor Corwin of \$166,000 of water, refunding and improvements bonds of City of Newburgh to Harris, Forbes & Co., of New York, has been formally confirmed by City Council.

Schenectady, N. Y.—Water Department is planning to spend \$100,000, "more or less," of taxpayers' money taken from Water Department to meter city, and meters will cost property owners approximately a dollar apiece to have them placed.

Thousand Island Park, N. Y.—Estimates for installation of proposed new water system have been received by directors of subscribers' organization and contract will shortly be signed with one of the bidders.

Alliance, O.—Chester & Fleming, hydraulic engineers of Pittsburgh, have been employed by city to prepare plans for 3,000,000-gallon storage reservoir. Bids for this work will be received during early part of October, 1912.

Charleston, S. C.—Election will shortly be considered for voting on municipal water and light plant.

Dallas, Tex.—The Commission has adopted report from Water Works and Sewerage Commissioner R. R. Neims recommending that City Secretary be instructed to advertise for five days for bids on 90 6-in three-way and 10 4-in. three-way fire hydrants. Bids on these hydrants are to be opened at 2 p. m., Sept. 16.

Galveston, Tex.—Bids for proposed new condenser at Alta Loma pumping plant has been rejected on ground of being too high. New specifications will be made and advertised.

Hampton, Tex.—At election held for purpose of voting on issuance of \$8,000 additional water works bonds for purpose of extending water system bonds carried by large majority.

New Boston, Tex.—Election is to be held at New Boston within next two or three months, to ascertain whether or not bonds to amount of \$15,000 shall be issued for purpose of installing municipal-owned system of water works.

Temple, Tex.—Additional water works and sewerage improvements will shortly be made.

Norfolk, Va.—Ordinance has been signed appropriating \$36,000, of which \$13,000 is for water mains in Park Place.

Snohomish, Wash.—City Council is considering laying water main across Snohomish River, and supplying people on south side of river with city water.

Fond du Lac, Wis.—Fond du Lac will issue bonds for \$25,000 for water works improvements.

CONTRACTS AWARDED.

Dothan, Ala.—By Water Works Commission for constructing water works and electrical machinery from plans of W. F. Thornton, Birmingham, as follows: Two 300 horse-power boilers to Heine Safety Boiler Co., So. Louis, Mo., \$4,970; an economizer to Sturtevant Co., for \$3,388; 350 kw. generator set to Westinghouse Co., Pittsburgh, Pa., \$4,685; condenser and cooling tower not let yet; switchboard to Ft. Wayne Electric Works, Ft. Wayne, Ind., \$1,675; air compressor to Hardie-Tynes Co., Birmingham, \$2,082; also same company for engine, an 18 and 35x30 cross compound, \$7,950; motor for driving compressor to Crocker-Wheeler Co., for \$2,535.

Augusta, Ga.—By city for extension of water works system, to B. F. Roberts, Macon, Ga., for five miles 6-in., 8-in. and 10-in. water mains, and to Lamar & Glover, of Augusta, for 150,000 cu. yds. excavation. Nisbet Wingfield is City Engineer.

Adams, Mass.—To construct a 400,000-gal. reservoir for L. L. Brown Co., paper manufacturer to A. C. Whipple Co., Worcester, Mass.

Winnipeg, Man.—By Board of Control for high-pressure water pipe and specials, to Canada Iron Corporation, Ltd., of Montreal, Que., at \$54,212.

Binghamton, N. Y.—To rebuild Rock-bottom Dam, to Mason I. Ford, at approximately \$25,000.

Newburgh, N. Y.—Contracts have been awarded by Board of Water Commissioners for laying water mains in several of city streets. Cost of work, including pipe supplied, will be about \$10,000. Mains are to be laid in following thoroughfares: Both sides of Broadway, from Mill st. to West st., about 6,300 ft.; Maple ave., over 1,010 ft.; Townsend ave. between Third and South sts., 1,030 ft.; Third st., between Prospect st. and Fullerton ave., 890 ft.; Carter st., between Prospect st. and Robinson ave., 560 ft. This makes about 6,300 ft. of pipe to lay; also 1,000 ft. of trench for service pipe. Jova & Kehoe's bid was as follows: Maple ave., Townsend ave., Third st. and Carter st., 6-inch pipe, for 34 cts. per lin. ft. for earth, with \$3.50 per cu. yd. extra for rock. For Broadway, both sides, from Mill to West st., 34 cts. per lin. ft. for earth and \$3.50 per cu. yd. extra for rock. For service pipe, 34 cts. per lin. ft. for earth and \$3.50 per cu. yd. extra for rock. Philip Falco: For laying pipe on the contract for all the streets and avenues named, with the exception of Broadway, 49 cts. per lin. ft. for earth work and \$4 per cu. yd. extra for rock. For laying the pipe in Broadway, 59 cts. per lin. ft. for earth and \$5 per cu. yd. extra for rock. Also for laying service pipe for the above, 59 cts. per lin. ft. for earth and \$5 per cu. yd. extra for rock. James Thomas Smith: Maple ave., Townsend ave., Third st. and Carter st., 25 cts. per lin. ft. for earth and \$1.75 per cu. yd. extra for rock. Broadway, from Mill to West st., the same. Gahran & Argenio: Broadway, from Mill to West st., 6-inch, 28 cts. per lin. ft. for earth and \$1 per cu. yd. ex-

tra for rock. On motion of Commissioner Brush it was then unanimously ordered that contract for laying water mains in Broadway be awarded to Gahrn & Argenio, as lowest bidder, at figures of that firm. It was also ordered by unanimous vote that contract for Maple and Townsend ave. and Third and Carter st. work be awarded to James Thomas Smith, as lowest bidder at his figures.

Rochester, N. Y.—To construct reinforced concrete conduit to connect Canadice and Hemlock Lakes, to Barrally & Ingersoll, at \$41,470.

Fargo, N. D.—For water main on N. P. ave., from Broadway to Roberts st., to C. H. Porritt. His bid was \$3 per lin. ft.; hydrants, \$79, and a sprinkling crane \$75. The only other bidder was L. W. Schurth, whose bid was \$3.09 per lin. ft.; fire hydrants, \$85, and sprinkling crane \$79.

Smithfield, N. C.—By city, to B. C. Copeland, Asheville, N. C., for water, electric light and sewer construction; contract for pole line, pumping machinery and electrical apparatus let to National Electric Supply Co., Washington, D. C.

Dallas, Tex.—Bids for construction of water filtration plant for Dallas have been opened by Board of Municipal Commissioners and tabulated by James H. Fuertes of New York, hydraulic expert, who has been engaged by city as consulting engineer in water filtration and sewage disposal matters. Mr. Fuertes' tabulation shows bids to be as follows: American Water Softening Company, of Philadelphia, \$201,673.67; H. C. Gass, of Bellview, Ill., \$203,538.30; McArthur Bros. Company of New York, \$205,121.90; John T. Jones Company of Dallas, \$234,564.60; Fred. A. Jones Company of Dallas, \$231,922.05. Lowest bid is that of American Water Softening Company, \$201,673.67.

El Paso, Tex.—To W. A. Fortner for water works at Franklin Rancho Amusement Park; to A. J. Davis, El Paso, for drilling three wells and installing pumping plant; to J. C. Wright, El Paso, for constructing 4,000,000-gallon cement reservoir.

LIGHTING AND POWER

Lodi, Cal.—Arrangements have been made to install 16 more electroliers on two blocks of improved streets.

Los Angeles, Cal.—Question of "lighted way" from Los Angeles to Venice via South Main st., Adams st. and Washington rd. is being discussed.

Jacksonville, Fla.—City Council of South Jacksonville has granted franchise to Jacksonville Gas Company of this city to supply gas for that municipality. Work of laying pipes will begin at once.

Bowden, Ga.—City will vote in September on \$8,000 bond issue for erection of electric plant.

Boston, Mass.—It has been announced that Mayor Fitzgerald is considering advisability of having entire city lighted by electricity and believes that it will be possible to save \$60,000 annually by substituting 40-candle power incandescent lamps for gas lamps.

Sardis, Miss.—Installation of electric lighting system in connection with present water works is being considered by city.

Butte, Mont.—Clerk has been directed to advertise for bids for installing luminous arc system of lighting as provided by ordinance passed by Council, bids to be submitted on Sept. 4.

Phillipsburg, N. J.—Installation of municipal electric plant is recommended.

Fulton, N. Y.—Proposition will be submitted to Board of Public Works on Monday evening by Baker Electric Company for installing of ornamental street lamps in Second st., from Oneida to Cayuga sts.; in Cayuga st., between First and Second sts., and in First st., from bridge to trolley station.

Niagara Falls, N. Y.—Question of installing municipal lighting plant is still being discussed.

Niagara Falls, N. Y.—City Engineer Fred. S. Parkhurst has announced that he would have report ready for Board of Public Works on cost and details of municipal electric lighting plant. Board of Works will meet on September 3.

Syracuse, N. Y.—Bids for electric lighting plant to be installed at Syracuse Institution for Feeble-Minded Children are being considered; estimated cost \$8,000.

Charleston, S. C.—Election will shortly be considered for voting on municipal light and water plant.

Arlington, S. D.—In accordance with result special election, when bonds in sum of \$10,000 were voted for installing

of municipal electric lighting system, steps will at once be taken to have system constructed.

Denton, Tex.—At City Council meeting Messrs. Brown & Denning, to whom was awarded gas franchises some time ago, were permitted to transfer franchise to North Texas Gas Company.

Niles City, Tex.—At approximate cost of between \$3,500 and \$4,000 Fort Worth Power & Light Company will shortly extend its wires through Niles City. Extension will be regulation 2,300-volt line.

Pulaski, Va.—City is considering construction of 1,500 horse-power steam-driven electric plant.

CONTRACT AWARDED.

Avilla, Ind.—By Village Board to Olds Construction Co., of Fort Wayne, for installation of electric light plant in Avilla, to cost about \$5,500. Electricity will be purchased for operating system.

Smithfield, N. C.—By city to B. C. Copeland, Asheville, N. C., for electric light construction.

FIRE EQUIPMENT

Los Angeles, Cal.—Board of Fire Commissioners has adopted recommendation that fire engine house to cost \$12,000 be erected at Central ave. and Fourteenth st. Plans will be prepared by Architect J. J. Backus, Chief Inspector of Buildings. Plans are also to be prepared for \$9,000 engine house to be built near Slauson ave. and Figueroa st.

Sacramento, Cal.—Wilder has recommended \$11,000 for extension of fire alarm system into suburbs which, he figures, will require about forty boxes.

Ridgefield, Conn.—Special meeting of citizens of borough has been called to vote on question of new hose wagon for fire department.

Windsor, Conn.—Fire-alarm Committee of Windsor fire company has voted to accept fire-alarm system as installed by Gamewell fire-alarm telegraph company.

Wilmington, Del.—Fire company is considering purchase of new Webb motor fire truck at cost of \$11,000.

Champaign, Ill.—Bond issue is being considered for new equipment and additions to fire department.

Paris, Ky.—Problem of having Paris supplied with natural gas is being discussed.

New Bedford, Mass.—City Council will consider purchase of new Webb engine for fire department.

Tracy, Minn.—Bids are being received for supplying city with 500 ft. of 2½-in. hose.

Broken Bow, Neb.—Purchase of motor fire apparatus is under consideration.

Winston-Salem, N. C.—Fire Committee will purchase 500 ft. of fire hose.

Manchester, N. H.—Orders for new fire station to house fire alarm telegraph system, new system and for placing of fire alarm wires under ground have been passed. These call for appropriation of \$103,000. Order providing automobile truck for fire station south of Piscataquog river has also been passed.

Camden, N. J.—Purchase of additional hose and other fire equipment has been recommended.

Akron, O.—Ordinance is being considered for purchase of fire apparatus.

Chester, Pa.—The Good Will Fire Co. No. 2, will build extensive addition to its headquarters at Fifteenth st. and Providence ave.

Johnstown, Pa.—Appropriation of \$3,500 has been authorized for purchase of auto engine.

West Fairview, Pa.—Additional fire house will be erected.

Williamsport, Pa.—Appropriation of \$5,500 has been authorized for purchase of automobile chemical wagon.

Dallas, Tex.—Bond issue of \$125,000 is being considered for erection of additional fire stations.

Pulaski, Va.—Installation of fire alarm system is being considered.

Spokane, Wash.—City is considering purchase of motor apparatus.

Tacoma, Wash.—Erection of two new fire stations will be asked for by Commissioner Mills.

CONTRACTS AWARDED.

Manchester, N. H.—Contracts of new fire station to house fire alarm telegraph apparatus, Gamewell system and placing of wires underground have been signed by mayor and members of committee. Appropriation available is \$103,000. Of that amount J. H. Mendell's contract for new building calls for \$45,333, Gamewell system \$30,000,

cable \$19,800, that contract having been awarded to American Steel and Wire Company, plumbing to Treffie Raiche, \$4,000 and steel stock \$11,339.82. There will also be \$2,650 coming to American Telephone Company for underground conduits.

BRIDGES

Fries, Ga.—Construction of 87-ft. span across Elk Creek has been authorized.

Topeka, Kan.—Board of County Commissioners has rejected all bids on five county bridges advertised. The bids rejected were for erection of the McCauley bridge at Auburn, the Cunningham bridge at Meriden, the Mitchell bridge near Auburn, the Ward bridge north of Kiro and the Zirkle bridge at Richland.

Topeka, Kan.—Ordinance has been adopted authorizing and directing Mayor to issue proclamation calling election for purpose of submitting to legal voters of said city propositions to construct certain bridges in said city, and to issue bonds of said city to pay for construction.

Lake Providence, La.—Nine iron bridges will be constructed by East Carroll parish.

Taunton, Mass.—Committee on Streets and Bridges has voted to recommend to municipal council \$4,000 loan appropriation for construction of concrete bridge over Ten Mile River, on Cohanet st., near Westville, and for concrete arch bridge over Littleworth brook, on Middleboro ave., near King's Furnace.

El Paso, Tex.—An international bridge between Juarez and El Paso is again being discussed. Estimated cost \$100,000.

Orange, Tex.—Erection of bridge to span Sabine River is being discussed.

Warm Springs, Va.—Two steel bridges will be constructed by Bath County Board.

Racine, Wis.—Board of Public Works will make extensive repairs to State and Fourth st. bridges.

CONTRACTS AWARDED.

Pine Bluff, Ark.—By Bridge Commission at \$605,000 to Roemheld Construction Co., Chicago, Ill., to construct steel bridge across Arkansas River.

Santa Ana, Cal.—For construction of two reinforced concrete bridges at Fullerton, by City Trustees. One will be put on North Spadra and other on Chapman ave. Charles Stansbury Co., of Los Angeles, was awarded contract for first for \$4,603, and for second at \$1,628.

Wilmington, Del.—To Tatnall-Brown Co. to build new crib for Market st. bridge. Contract price is \$5,550.

East St. Louis, Ill.—By City Council for construction of bridge on Eighty-ninth st. to Murphy Construction Co. at \$597. Belleville will pay half the cost.

Peoria, Ill.—For construction of Boliger bridge, which is to span Mackinaw River at line between Hopedale and Tremont townships, to H. S. Wetherell of Chicago, on his bid of \$8,500.

Marion, Ind.—By Grant County Commissioners for six small bridges, chiefly of concrete arch plan. William Baldwin, who bid by cubic yard, was awarded contract for Campbell bridge east of the city at \$4.50 for concrete and 45 cts. for excavation. Miles and Shaffer, of Upland, were awarded other contracts as follows: Bish bridge, \$250; Frank Druckemiller bridge, \$190; Burr Druckemiller bridge, \$130; Atkinson bridge, \$180, and Cox bridge, \$209.

South Bend, Ind.—For construction of three bridges. Eldred bridge, Union Township, \$450; Shafer bridge, in Center, \$500, and Rose bridge, on St. Joseph and Marshall county line, \$525, to I. Van Shyhawk and H. G. Wagner.

Des Moines, Ia.—To N. M. Stark, by Polk County Board of Supervisors for erection of four bridges in Saylor, Douglas, Webster and Crocker townships. Stark's bid for four bridges was \$5,138 lower than that submitted by any other of three firms which submitted bids.

Portland, Me.—By Portland Bridge District Commissions for painting Vaughan Bridge to Wildes & Osterberg of 27 Cotton st. Contract price is \$2,987.

Urbana, O.—For Dodge bridge over Nettle Creek, in Urbana Township, by County Commissioners to The Home Engineering and Construction Co., of Canton, at \$1,747, with additional \$140 for flooring.

Pittsburgh, Pa.—For repairing of Seventh Street Bridge and Thirtieth Street Bridge by Controller Cunningham and County Commissioners to Pittsburgh Construction Company. The contract price for Seventh Street Bridge is \$44,000 and \$27,000 for the Thirtieth Street Bridge.

Fowlerton, Tex.—By La Salle County to Missouri Valley Bridge & Iron Co., Dallas, Tex., at \$3,160, to construct steel highway bridge across Frio River.

MISCELLANEOUS

Mobile, Ala.—Resolution calling for expenditure after Jan. 1 of \$50,000 on Mobile City Hospital has been unanimously adopted at special meeting of City Commission.

Berkeley, Cal.—City Engineer J. J. Jessup has submitted to City Council plans and specifications for municipal incinerator which Berkeley purposes to erect. Plant will cost approximately \$60,000 and work will be begun on it in near future.

Berkeley, Cal.—Construction of municipal bathing place is recommended.

Los Angeles, Cal.—Authority to build the municipal machine shop and garage has been granted Board of Public Works by resolution of City Council. Estimated cost \$30,000.

Denver, Col.—Voters will shortly be asked to decide whether State shall issue \$4,000,000 in bonds for construction of tunnel through James Peak for public or semi-public uses.

Indianapolis, Ind.—Board of Public Works has signed contract with Pennsylvania Railroad Company for elevation of steam railway tracks of company's J., M. & I. division from South st. to point south of Morris st. It is estimated that cost of section in question will be approximately \$500,000, of which 75 per cent. will be paid by railway company and other 25 per cent. divided

between city, county, Woodruff Place and the Indianapolis Traction and Terminal Company. Contracts for work will be let by railway company, subject to approval of Board of Public Works.

Crowley, La.—City Council of Crowley has accepted bids upon \$33,000 in bonds. Bonds were sold to firm of Haehler & Cummins, of Toledo, O.

Boston, Mass.—Council has adopted order providing for appropriation of \$10,000 for plans and specifications for new police stations at Court square, City square, Charlestown, and Broadway, South Boston.

Boston, Mass.—Acting Chairman of city's park board says that his department requires \$3,500 for repairing pier at Marine Park, South Boston, and \$3,500 for repairs on foot bridge at Wood Island Park.

Boston, Mass.—Construction of municipal garage is being considered.

Boston, Mass.—Improvements proposed for North End bathing beach will cost about \$40,000, according to plans just submitted at mayor's office by Architect Arthur E. Shurtleff.

Swampscott, Mass.—Citizens have voted to appropriate sum of \$3,000 for purchase of combination automobile ambulance and patrol wagon.

Metuchen, N. J.—It has been decided to build retaining wall at Dunham's Hill.

Schenectady, N. Y.—State Superintendent D. W. Peck will receive bids Sept. 10 for construction work on barge canal terminal, which it is estimated will cost about \$153,000.

Paris, Tex.—City Council has sold \$90,000 of bonds recently authorized to be issued to the Commerce Trust Company of Kansas City and to Mayer, Depp & Walter on a joint bid.

Norfolk, Va.—Bids will be received at the office of the City Treasurer of Norfolk, Va., until 12 o'clock, M., Sept. 12, 1912, for \$835,000 4½ per cent. 30-year coupon bonds.

Petersburg, Va.—Finance Committee will probably introduce ordinance providing for issue of \$165,000 for improvement purposes.

Milwaukee, Wis.—Finance committee of Common Council are discussing proposition of bond issue for proposed Menominee river flushing tunnel.

Racine, Wis.—County Treasurer Joseph Patrick will have to readvertise for bids for taking gravel out of County gravel pit near Burlington and for crushing gravel, as it was found that bids previously advertised did not cover all of contract.

CONTRACTS AWARDED.

Richmond, Ind.—For construction of dam and fill for new lake of Richmond Lake & Park Company to Isaac Smith, local contractor. Smith agreed to do work according to plans and specifications made by Architect Mueller, of Cincinnati, for \$20,350.

Dayton, O.—For straightening of Miami river to Gephart & Kline at \$385,990.80.

Dallas, Tex.—To Pierce-Fordyce Oil Association for furnishing city's lubricating oil, etc., for ensuing twelve months: Following is scale of prices city is to pay for its oil, axle grease, etc.; High-pressure cylinder oil, 30 cts. per gallon; low-pressure cylinder oil, 30 cts. per gallon; high-grade engine oil, 18 cts. per gallon; low-grade engine oil, 16 cts. per gallon; high-grade air compression oil, 24 cts. per gallon; high-grade gas engine oil, 19 cts. per gallon; high-grade auto oil, 19 cts. per gallon; cup grease, 7 cts. per gallon; axle grease, 25 pound drums, 3½ cts. per pound; high-grade gasoline, 15 cts. per gallon; motor naphtha, 12 cts. per gallon; refined oil, 8 cts. per gallon.

Dallas, Tex.—The R. S. Winn Company of Dallas submitted bid of \$4,750 for building auxiliary crematory, and will probably be awarded the contract.

TOO LATE FOR CLASSIFICATION

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREET IMPROVEMENTS				
Michigan	Warren	Sept. 10	Constrn. 700 ft. cement walk	Fred. Lutz, Vil. Clk.
Utah	Salt Lake City	Sept. 10, 10 a.m.	Constrn. sidewalks	Noble Warrum, City Recorder.
Texas	Corpus Christi	Sept. 10, 9 a.m.	Constrn. 150,000 sq. yds. paving	T. B. Dunn, City Secy.
Maine	Augusta	Sept. 11, 3 p.m.	Constrn. bituminous macadam road	P. L. Hardison, State Comr. Highways.
Indiana	Evansville	Sept. 12, 10 a.m.	Improving road	C. W. Hartig, Ch'man Comrs.
New York	White Plains	Sept. 12, 1 p.m.	Macadamizing road	F. D. Hopkins, Town Clk.
Idaho	Moscow	Sept. 14	Constrn. 30 blocks of paving	City Clerk.
Ohio	Niles	Sept. 14, noon	Constrn. vitrified brick pavement	J. E. Tregaskis, Clerk.
Minnesota	Minneapolis	Sept. 16, 11 a.m.	Constrn. 1 mile gravel road	A. P. Erickson, Co. Aud.
WATER SUPPLY				
Iowa	Fort Dodge	Sept. 10	Constrn. 2,000,000 gal. reinforced concrete reservoir	Burns & McDonnell, Engrs., Kansas City.
Ohio	Dayton	Sept. 12	Constrn. conduit & standpipe cost \$100,000	Dir. Pub. Serv.
Mississippi	Lambert	Sept. 14, 2 p.m.	Sinking well & furn. valves, hydrants, fittings, pipes, &c.	S. Ingram, Town Clk.
Ohio	Akron	Sept. 16, noon	Furn. gate valves, air valves, &c.	R. M. Pillmore, Dir. Pub. Serv.
FIRE EQUIPMENT.				
Pennsylvania	Scranton	Sept. 14, 10 a.m.	Constrn. fire house	W. G. O'Malley, Dir. Pub. Saf.
New Jersey	Maplewood	Sept. 17, 8 p.m.	Furn. auto chemical & hose wagon	W. H. Kemp, Chrmn. Comm.

STREET IMPROVEMENTS

Los Angeles, Cal.—Rough stretch of road between junction of Crenshaw boulevard and Wilshire will be repaired shortly.

Atlanta, Ga.—Mayor Courtland Winn has approved contract for paving Marietta st. with wood block, from Tabernacle place to North ave., and T. D. Meador, Jr., the contractor, will begin work at once.

Chicago, Ill.—Resolutions favoring widening of Halsted st., from West Chicago ave. to West 12th st., with cash aid of city by bond issue, are being considered.

East St. Louis, Ill.—At meeting of residents of Signal Hill, suburb of East St. Louis, R. E. Gillespie, Julius Kirchner and C. W. Holmbach were appointed committee to make plans for improvements of several miles of streets in district.

Indianapolis, Ind.—Resolution has been adopted by Board of Park Commissioners recommending that macadam roadway being built in Crawfordsville road, from Indiana ave. to Emrichville bridge across Fall creek be made 20 ft. wide, instead of 15 ft., as planned by Board of Public Works.

Syracuse, N. Y.—Designation specifying vitrified brick as material for paving West Onondaga st., from South Geddes st. to Kandace st., has been filed by property owners with Secretary John J. Halloran of Board of Contract and Supply.

Akron, O.—Better roads from Akron to north part of county are asked for.

Dayton, O.—Bonds have been sold at office of City Auditor Bish for paving of Burkhardt ave., North Main st., Phillips ave., and for emergency purposes for health department. Total amount sold was \$73,800. Burkhardt ave. 5 per cent. paying bonds, in sum of \$34,000, were sold to A. E. Aub & Co., of Cincinnati; the North Main st. 5 per cent. paving bonds, in sum of \$23,000, to same company; the Phillips ave. 5 per cent. bonds in sum of \$13,500, to Breed & Harrison, of Cincinnati; health emergency 4½ per cent. in sum of \$3,000, to A. E. Aub & Co., of Cincinnati.

Springfield, O.—Two issues of East High st. improvement bonds have been disposed of to Stacey and Braun, of Toledo.

Toledo, O.—Three Lucas county contractors have submitted bids to state highway department for contract providing for improvement of Monroe turnpike from Glendale ave. to intersection of road with River road, at estimated cost of \$30,000. Specifications called for bids on four different kinds of road improvement, and awarding of the contract will be dependent upon character of road decided upon by county commissioners. Bids submitted were as follows: For tar macadam, John D. Raymer, of Toledo, \$26,277.49; C. W.

Ryan, of Maumee, \$25,500; brick, John D. Raymer, \$26,277.49; C. W. Ryan, \$26,600; tar concrete, John D. Raymer, \$31,925.80; Russel & Jennison Co., of Toledo, \$33,178; asphalt concrete, John D. Raymer, \$31,925.80.

Troy, O.—Bids have been opened for paving of six streets in uptown districts. There were three bidders, Bigler Bros., of Middletown, successful bidders for section 3 of Troy-Piqua highway; James Hennessey & Bros., of Troy, and John Wroe, of Dayton. Bids run from \$1.31 square yd. to \$1.49, according to material.

Wauseon, O.—Bids will be received at the Auditor's office, Wauseon, Fulton County, Ohio, until 10 a. m. on the 17th day of September, 1912, for \$20,000 worth of bonds for improvement of road No. 60. C. J. Ives, Auditor.

Portland, Ore.—City Engineer Hurlburt has been directed to prepare plans for improvements to large number of streets.

Reading, Pa.—Ordinance will be considered for increasing city debt \$100,000 by loan to be used for paving streets.

Knoxville, Tenn.—Paving of Forest ave., from Fourth to Ninth sts., and Oklahoma ave. has been authorized.

Seattle, Wash.—Bids received for following improvements: Jackson st., paving, Xuria Case, \$26,062.50; Ferguson-Coit Co., \$24,669.10; D. H. Traphagen, \$25,295.74; T. Ryan, \$23,776.52; G. W. Walker, \$26,145.92; Washington Constn. Co., \$24,066.30; Elliott Constn. Co., \$23,243.74. Lucille st., et al, planing: Tom Hansen, \$3,999.00; Bjork Bros., \$4,292.37; J. R. Wood, \$4,749.22; A. Swanson, \$4,125.41; Elliott Constn. Co., \$4,180.60; J. Ruthe, \$4,350.90; J. A. McEachern Co., \$4,446.17; Henry Brice, \$4,219.20. East Fifty-fifth st. et al, grading, etc.: Henry Brice, \$4,516.61; D. H. Traphagen, \$6,345.47; Robert Barter, \$4,913.70. Sixth ave. N. E. et al, grading, etc.: Henry Brice, \$3,553.91; D. H. Traphagen, \$3,437.85; Robert Barter, \$3,377.72. Alley, block 13, Capitol Hill Add., Div. 2, paving: Xuria Case, \$2,976.50; Elliott Constn. Co., \$2,864.13.

Bellaire, W. Va.—Resolution to improve Guernsey st. from Nineteenth to Twenty-third by paving has been passed.

Benwood, W. Va.—Marshall County Court has entered order authorizing bond election in Union district for \$150,000 to build hard surface roads. Amount to be raised by above issue will hard surface at least 32 of 43 miles of road in this district, and 11 miles which will not be hard surfaced are composed largely of small roads traveled only by few people.

CONTRACTS AWARDED.

Sacramento, Cal.—To Clarke & Henry Constn. Co., Stoll Building, for paving and surfacing street railway right of way for the Pacific Gas & Electric Co., for \$29,722.

Los Angeles, Cal.—To Fairchild-Gilmore-Wilton Co., for improving Occidental blvd. for \$33,367.

Santa Barbara, Cal.—To James P. Donohue for improving Hollister ave., at \$4,905.

Venice, Cal.—To Hudson-Johnson Constn. Co., of Oakland, for grading of streets and construction of curbs and sidewalks in tract comprising 23 blocks at Venice.

Boise Idaho.—By City Council for paving in Local Improv. Dist. 18, work to include 600 cu. yd. excavation, 3,891 sq. yds. 6-in. 1-3-5, 1-course plain concrete pavement, 1,782 sq. yds. oil macadam, and 1,120 lin. ft. curb, to Maney Bros. & Co., 123 S. Eleventh st., Boise, for \$5,826.

Weiser, Idaho.—By city to Reliance Constn. Co., of Portland, Ore., for sidewalks, etc., as follows: 600,000 sq. ft. 6-in. concrete sidewalk, 9½ cts.; 3,000 sq. ft. 10-in. concrete sidewalk, 11 cts.; 100,000 lin. ft. concrete curb, 31 cts.; 100,000 cu. yds. excavation, 29½ cts.; total, \$117,830. Totals of other bids: McKay & Reed, Salt Lake City, Utah, \$135,250; James Kennedy Constn. Co., Salt Lake City, Utah, \$171,300; Maney Bros. & Co., Boise, \$141,315; Nash & Co., Missoula, Mont., \$151,360; Inland Empire Paving Co., Spokane, Wash., \$158,890; Gillis Constn. Co., Caldwell, \$136,450; J. P. O'Neill, \$126,360; Reliance Constn. Co., Portland, Ore., \$117,830; G. A. Heman, St. Louis, Mo., \$137,330; Sherman Constn. Co., Greeley, Col., \$153,390; Fisher-Dempsey Constn. Co., Pueblo, Col., \$136,420; Vickery, Forster & Doll, Denver, Col., \$126,920; E. M. Moore & Co., Tacoma, Wash., \$134,822; Bird-Mendenhall Constn. Co., Salt Lake City, Utah, \$127,390; Two Miracle Concrete Corp., Kalispell, Mont., \$131,160; Federal Constn. Co., San Francisco, Cal., \$136,868.

Moline, Ill.—By Board Local Improvements, as follows: Sixteenth ave. to Western Improvement Co., \$37,625, and Thirteenth st. to I. D. Lain, for \$4,800.

La Salle, Ill.—By Board of Local Improvements, for paving Fourth and Hennepin sts. to Keys & McNamara, of La Salle, for \$8,860.

East St. Louis, Ill.—To Harding Bros. & Co., for paving of Forest blvd., to Meyer & Thomas Constn. Co., for \$19,212.

Rock Falls, Ill.—For paving First st. with brick, to McCarty & Fitzgerald, of Rock Falls, for \$11,860.

St. Paul, Minn.—Board of Public Works has received two bids for paving of Sixth st., from Sibley to Rosabel sts. No award was made, matter being taken under consideration to decide whether creosote blocks or asphalt should be used. Engineer's estimate on paving are: Asphalt, \$7,233.30; brick, \$6,956.28; granite, \$10,711.44; sandstone, \$9,550.24; creosote blocks, \$9,018.54. General Contracting Company of Minneapolis made following bid: Sandstone, \$8,926; creosote blocks, tamarack or Norway pine, \$8,526; creosote blocks yellow pine, \$9,019; resurfacing with asphalt, \$5,079; concrete work to repair old foundation, \$5.50 a cubic yard. Mr. O'Leary estimated that it would cost about \$1,000 to repair the old foundation. Other bid was from Fielding & Shepley of St. Paul, as follows: Creosote blocks, yellow pine, \$8,926; sandstone, \$9,080.

Harrisburg, Pa.—By State Highway Commissioner E. M. Bigelow for road contracts as follows: Columbia county, Catawissa borough, J. S. Caldwell, Trenton, N. J.; Lycoming county, Clinton and Muncy Creek townships, State road route No. 240, Busch & Stewart, Williamsport; York county, York township, State road route No. 216, the Juniata Company, Philadelphia; Bradford county, Towanda township, Blaisdell & Sheldon, Punxsutawney; Susquehanna county, Latrobe, State road route No. 9, T. S. Newman, Athens.

Pittsburgh, Pa.—For grading of the H. C. Frick holdings on "Hump" has been let to Booth & Flynn, and work on getting property down to new grades of Fifth avenue and Grant street will be undertaken as soon as street conditions will permit.

Houston, Tex.—To W. S. Hipp for graveling streets of Houston Heights at \$43,763.

Terrell, Tex.—By City Commission for paving with rock asphalt Moore avenue at \$1.71 per sq. yd.

Vancouver, B. C.—For street work by City Council: Paving Keefer st. at \$65,578; Hornby st. to Leddingham & Cooper, at \$52,790; resurfacing of Hastings st., McAdam & Co., at \$7,280; paving of Main st., from north and south of the bridge, and Seaton st., from Burrard to Butte sts., at \$28,000 and \$20,854, respectively; granitoid pavement on Columbia st., to the B. C. Granitoid Co., at \$11,110.

SEWERAGE

Thompsonville, Conn.—Present Elm st. sewer is to be extended 500 feet farther east. Eight-inch mains will be laid and contractors' estimates will be advertised for at once.

Indianapolis, Ind.—Board of Public Works has adopted resolution for local sewer in North Illinois street, from Thirty-eighth to Forty-second streets. It is estimated that sewer will cost \$13,900. Construction will range from pipe 15 inches in diameter to brick sewer 30 inches in diameter.

Girard, O.—Engineer has submitted estimate of cost of proposed sewer improvements in Broadway hollow and also in rear of the Stotler, J. Jones and Hauser properties. Broadway job was estimated at \$4,457.85 and other \$2,050.

Portland, Ore.—Plans have been ordered prepared for sewers in various streets.

Knoxville, Tenn.—City will build Third creek sewer from the Tennessee river, paralleling Third creek north to the Southern railway main line. Sewer laterals will be built east from main sewer on Grand, Forest, Highland, Laurel, Clinch, Cumberland, Rose and other avenues running east and west between Ninth street and Third creek. City has issued \$125,000 sewer bonds, which have been sold.

CONTRACTS AWARDED.

Los Angeles, Cal.—To M. N. Pekich at \$28,800 for the construction of sewer in Montana and in other streets.

Kansas City, Mo.—By Board of Public Works to Williams & Sample for building sewers in Sewer District No. 233, Div. 5, at \$22,079.20. District lies be-

tween Forty-fourth, Summit and Wyandotte streets.

Hightstown, N. J.—By Council for constructing sewer system and sewage disposal plant to John R. Jeffrey, of Elberon, at about \$32,000. Other bidders were: Martin & Miller, Garfield, \$38,000; J. F. Caldwell, Trenton, \$34,000; P. A. Hennessy, Mount Vernon, N. Y., \$37,000. The contract calls for completion of the five-mile sewer system.

Utica, N. Y.—By Board of Contract and Supply for constructing 12-ft. reinforced concrete arch sewer, extension of present intercepting sewer to Mohawk river as straightened, to John P. Baxter, of Utica, for \$18,855.

Minot, N. D.—By city to J. M. Carroll & Sons, of Grand Forks, for constructing sewer and water works improvements as follows: 9,029 ft. 12-in. pipe sewer, \$6 to \$4, according to depth of trench; 15,371 ft. 10-in. sewer, 7 to 15 ft. deep, 75 cts.; 11 manholes for 12-in. sewer, ea. \$15; 46 manholes for 10-in. sewer, ea. \$50; 4 street inlets, ea. \$30; 500 ft. deep cut house connections, 30 cts.; 2 concrete river crossings, one at \$2,800 and the other \$400; 14,406 6-in. water mains, \$1.17; 1,898 8-in. water mains, \$1.55; hydrants, etc.; total cost of sewers, \$37,283; total cost of water improvements, \$23,517.

Portland, Ore.—Bids for sewers have been received by City Executive Board as follows: Hassalo and East Thirty-first streets, E. W. Riner, \$295; K. Y. Azar, \$279; John Keating, \$275. Adams street, E. W. Riner, \$546; Montague-O'Reilly Company, \$659; John Keating, \$594. East Second street, between Holladay and Oregon, M. Chelich, \$445; E. W. Riner, \$426; John Keating, \$399. East Twenty-first street, between Pacific and Holladay, K. Y. Azar, \$241; John Keating, \$249; E. W. Riner, \$268. East Twentieth street, from Holladay to Pacific, K. Y. Azar, \$208; E. W. Riner, \$288; John Keating, \$271. Contracts for sewers on Hassalo and Adams streets were ordered let lowest responsible bidders.

WATER SUPPLY

Logan, Ia.—Twenty thousand dollars in bonds for improvement of city water-works of Logan have been sold to George M. Bechtel Company, of Davenport, Ia., at premium of \$350.

Barker, N. Y.—Special village election will be held on October 17. Proposition to be voted on is whether or not up-to-date water system for fire protection shall be installed, cost not to exceed \$25,000.

Salem, O.—Appropriating out of Water Works Fund sum of \$5,000 for purchase of air compressor, setting same and to build extension to engine house.

Seattle, Wash.—Bids received for construction of water mains on Fortieth avenue S. W. as follows: Dicken & Rightmire, \$24,954.20. Ward & Scherer, \$26,276.90; Erickson Bros., \$24,964.65; Washington Construction Co., \$25,214.50; Elliott Construction Co., \$25,294.70; Jahn Construction Co., \$25,311.70; Ferguson-Coit Co., \$25,058.70; International Dredging Co., \$24,752.45.

CONTRACTS AWARDED.

Rising City, Neb.—To Alamo Engine & Supply Co., Omaha, Neb., to build electric light plant and rebuilding water works pumping station. Contract price, \$8,286.

Skilman, N. J.—By village for water tank and tower to Stothoff Bros., of Flemington, for \$3,360.

LIGHTING AND POWER

Lesterville, S. D.—Commercial club, acting in conjunction with city council, has arranged to have electric light system installed, for lighting fire department headquarters, town hall and principal business street.

FIRE EQUIPMENT

Milford, Del.—Erection of fire house and City Hall is being considered.

Des Moines, Ia.—Improvements to fire fighting apparatus to cost about \$75,000 is recommended by Fire Chief William Burnett as follows: Fifteen fire stations and heating plants, \$12,500. Total of 100 hydrants for water supply, no estimate as to cost. Two combination pumping engines, carrying 2,000 feet of hose, to be located at stations No. 1 and No. 2, cost each \$10,000. Two squad wagons carrying 1,000 feet of hose and seven men to be located at stations No. 1 and No. 2, apparatus cost, \$10,000. Salaries of men, \$6,300 first year. Tractor on aerial truck, \$3,500.

BRIDGES

Niagara Falls, N. Y.—Plans for remodeling of bridges from mainland to Green Island and from Green Island to Goat Island are being prepared in office of State Engineer John A. Benschel at Albany. Superintendent Eckert expects to have plans in hand so that he could let contracts to start work by September 15.

CONTRACT AWARDED.

Topeka, Kan.—By Board of County Commissioners to Topeka Bridge & Iron Co. for erection of five bridges at cost of \$13,015. Two of these will be of concrete, while others will be steel with concrete floors.

MISCELLANEOUS

Los Angeles, Cal.—New bids for removal of old government jetty on east side of site of municipal dock No. 1 in outer harbor have been asked for by board of public works. Specifications have been approved by harbor commission.

Los Gatos, Cal.—First legal steps toward presentation of bond issues to voters of Los Gatos for street improvements, sewerage system, park and city hall, have been taken by town board of

trustees. Bond issues as given in resolution are as follows: Town hall, \$10,000; park, \$6,000; sewerage system, \$30,000; all to be 100 per cent. issues, totaling \$46,000. Street improvements, including concrete curb and gutter, \$15,000; regrading and paving, \$67,000; culverts, \$2,000; engineering and contingencies, \$3,500; totaling \$87,500; to be paid for by bond issue of 40 per cent., amounting to \$35,000, and remainder assessed to abutting property owners.

Milford, Del.—Erection of City Hall and fire house is being considered.

New Orleans, La.—Bids have been opened by Sewer and Water Board for furnishing board with two cranes, which are to be installed at new power house No. 2, in connection with new 6,000-kilowatt generator for operation with the drainage system. One of cranes is to be 40-ton electric operated, and other a 10-ton, either hand operated or electric operated, as the board may decide, bids being given on both classes of latter size. There were six bids opened in all, exclusive of that of Miles, Bennett, Pond Co., of New York, which sent in required \$50 deposit, but whose bid failed to arrive. Those whose bids were opened were: Whiting Foundry Equipment Co., Harvey, Ill., for 40-ton crane, \$6,970; for 10-ton hand operated, \$850; for 10-ton electric operated, \$2,220; Manning, Maxwell & Moore, New York, for 40-ton, \$6,-

438; for 10-ton hand, \$860; for 10-ton electric, \$3,263; Pawlings & Henschel Co., Milwaukee, Wis., for 40-ton, \$8,250; for 10-ton hand, \$1,800; for 10-ton electric, \$2,700; Toledo Bridge & Crane Co., for 40-ton, \$6,500; for 10-ton hand, \$1,575; for 10-ton electric, \$2,200; Cleveland Crane & Engineering Co., Cleveland, O., for 40-ton, \$6,750; for 10-ton hand, \$720; for 10-ton electric, \$2,280; Northern Engine Works, Detroit, Mich., for 40-ton, \$6,865; for 10-ton hand, \$1,630; for 10-ton electric, \$2,710.

Boston, Mass.—Mayor Fitzgerald has finally approved Wells Brothers' contract for erection of new City Hall annex for \$743,510.

Poughkeepsie, N. Y.—Purchase of voting machines is being considered.

Akron, O.—State board is considering question of garbage and sewage disposal plants.

Springfield, O.—Bond issue of \$20,000 for hospital improvements has been awarded to First National bank.

Erie, Pa.—Erection of municipal garage is being considered.

Cleburne, Tex.—Bond election will be held Sept. 23 for voting on \$175,000 issue for erection of court house.

Star City, W. Va.—Town council has passed proclamation authorizing \$15,000 bond issue to be used in improvements of various kinds in borough.

PROPOSALS

GASOLINE LIGHTING

Philadelphia, Pa.

Sealed proposals, endorsed, "Bids for Gasoline Lighting" and addressed to the undersigned, at Room 216, City Hall, will be received until 12 o'clock, noon, on Tuesday, September 24th, 1912, for lighting with mantle lamps, burning naphtha or other illuminating oil and for furnishing new lamp posts for lighting the streets, avenues, boulevards, sidewalks, alleys, wharves, parks and public places in the City of Philadelphia during the year 1913. The City owns the posts now in use.

Bidders will note that the Department is unable to state the amount of money available for this work, but this advertisement is made and contract will be awarded subject to future appropriation to be made by City Councils.

Instruction to bidders:

Specifications and blank forms upon which bids must be made can be obtained upon application at the office of the Bureau of Lighting, Room 330, City Hall, or office of Director, Department of Public Works, Room 216, City Hall.

No bid will be considered unless accompanied by a certificate from the City Solicitor that the provisions of an ordinance requiring proposal bonds when the bids exceed in amount five hundred dollars, approved May 25, 1860 (p. 81 West), have been complied with.

The Director reserves to himself the right to reject any or all bids, as he may deem best for the interests of the city.

M. L. COOKE, Director.

(10, 11, 12)

INDUSTRIAL NEWS

(Continued from page 350)

Paving Brick.—Charles M. Crook, formerly general manager of the Bessemer Limestone Co., Youngstown, O., and president of the National Paving Brick Manufacturers' Association, is now the general manager of the Tidewater Paving Brick Co., Catskill, N. Y. The Catskill plant is now being remodelled and the company is now strong financially. For these reasons and owing to their facilities for shipping by water it is believed that Catskill paving brick will figure more prominently in the paving business than heretofore.

Street Signs.—Among the orders recently booked by the Indestructible Sign Co., Columbus, Ohio, for their solid steel drilled-in letter signs, is an order from the State of South Carolina for several hundred large road signs, 12x28 inches, to be put up on the main automobile roads crossing the State. Also an order from Lee County, S. C., for country road signs and one from Staunton, Va., for country road signs.

Air Compressors.—The Quincy Engine Company, Chambersburg, Pa., has received another order for more compressors, the same as were used in our sewer construction work, to be shipped to New York state. The demand for these machines is increasing rapidly as they have proved a great labor saver and economizer of time. The company is receiving inquiries from all parts of the United States, and from Bulgaria and South America. The centrifugal pump manufactured by this company is also in great demand. John T. Metcalfe, Superintendent of the company, has invented an appliance to be attached to the Quincy engines, which will operate the engine by kerosene instead of gasoline. In fact crude petroleum will operate it just as well as anything else. Mr. Metcalfe has applied for a patent for his new invention.

Creosoted Paving Blocks.—City Chemist, Victor H. Roehrich, St. Paul, Minn., has tested the creosoted wood paving blocks to be used on Fifth street, between Wabasha and St. Peter, and Fourth street, between St. Peter and Seven corners, and found them satisfactory. Slightly over 16 pounds of creosote per cubic foot of wood was registered in the tests. The blocks are of Southern yellow pine and are treated by the Republic Creosoting Company. Southern yellow pine has been found to stand better than either Norway pine or tamarack. The blocks are heated by steam for two hours to remove the moisture. Then they are run on cars into a retort fifty feet long by ten feet in diameter. The creosote is then run in the tank, closed, and the pressure raised to 150 pounds.

Clay Sewer Pipes and Fittings.—There appears to be a splendid market for clay sewer pipes and fittings in Argentina, where there is a large consumption of these goods, but handling them is not an attractive proposition to the importer on account of the big percentage of breakage. Clay pipes

and fittings are manufactured on a very small scale. The imports for 1910 were: From Germany, 163,609 pieces; Spain, 1,387 pieces; France, 166 pieces; Great Britain, 428,682 pieces. During 1911 there were 2,007,143 pieces imported, but the classification by countries is not yet available. The following duties apply to clay pipes. Up to 20 centimeters (7.874 inches) in diameter, 5.2 cents per piece; over 20 centimeters in diameter, 9.1 cents per piece. A list of Buenos Aires importers of clay goods may be had from the Bureau of Manufactures, Washington, D. C.

Hendricks Commercial Register.

The twenty-first annual Revised Edition of Hendricks' Commercial Register of the United States for Buyers and Sellers, has just been issued by S. E. Hendricks Co., Publishers, 74 Lafayette street, New York. It has been published annually since 1891 and is the most complete work of its kind in existence. Its aim is to furnish complete classified lists of Manufacturers for the benefit of those who want to buy as well as for those who have something to sell. It covers the Architectural, Engineering, Electrical, Mechanical, Railroad, Mining, Manufacturing and kindred trades and professions. The present is by far the most complete edition of this work so far published. The twentieth edition required 108 pages to index its contents, while the twenty-first edition requires 122 pages, or 14 additional pages. The twentieth edition numbered 1,419 pages, while the twenty-first edition numbers 1,574 or 155 additional pages. Add to the latter about 230 pages of cancellations, errors, etc., omitted from the present edition, and you have a total of 385 pages of new matter, the whole representing upwards of 385,000 names and addresses.

Street Signs.—The Indestructible Sign Company, Columbus, O., have recently received orders for their new patented drilled-in letter indestructible sign from the cities of Centralia, Ind., and Durant, Okla.

Iron Pipe and Fittings.—James B. Clow & Son, Chicago, Ill., are preparing plans for the building of an addition to their Coshocton, Ohio, plant, the new structure to be 100x300 ft. of reinforced concrete and equipped for the manufacture of pipe.